p l a n n i n g

Economic Development and Growth Strategies in the Southeast: Four Perspectives

Featuring articles from:

Eric Thompson, Stephan Weiler and Terutomo Ozawa • Jeremy L. Jones and Susan B. Kask • Suzanne Dowling, Jeffery Maxim, John Quinterno and Najeema Davis Washington • Linda K. Breggin

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Carolina Planning is a student-run publication of the Department of City and Regional Planning, University of North Carolina at Chapel Hill.

From the Editors:

Economic development and analysis lies at the heart of our latest issue of the *Carolina Planning Journal*, vol. 27. 1. We begin with an article from three researchers, Stephan Weiler and Terutomo Ozawa from Colorado State University and Eric Thompson from the University of Kentucky. The last few years have produced new research on the development of industrial clusters, particularly in the Southeast; this article analyzes the development of a new automotive industrial cluster in Kentucky. Drawing on previous findings and new research, the authors found that under certain conditions a core plant may spark the development of secondary and tertiary industries. However, planning interventions may be necessary to avoid skewed market incentives that would inhibit development.

Next, we hear from Jeremy Jones and Susan Kask, who analyze the effect of alternative land use scenarios on local government property tax revenues and costs of property tax-supported services in Macon County, North Carolina. Their findings justify arguments that a differential property tax system for open space should be adopted, as open space would cost the county less in tax revenues to service.

Another economic growth strategy, voluntary annexations, provides the subject of our third article. Four masters candidates in public administration at UNC -- Suzanne Dowling, Jeffery Maxim, John Quinterno, and Najeema Davis-Washington -- describe the use of computer applications in a modified cost-benefit analysis for a proposed annexation by the City of High Point, North Carolina. They focus on the financial costs and benefits to the city and outline the recommendations they had presented to the High Point City Council last year.

The practice of granting tax incentives for economic development has received plenty of attention in the planning profession. Linda Breggin from the Environmental Law Institute analyzes a variety of these programs in the state of Virginia. While the programs reviewed in this report provide nearly $30 million in government support to business development, the author finds that elected officials have paid little attention to the environmental impacts or land use implications of these programs. The article overviews a set of measurements that analysts can use for future economic development programs.

Those of you who are interested in obtaining additional copies of this latest issue may email our staff at *carolinaplanning@yahoo.com* or contact Carolyn Turner in the Department of City and Regional Planning at (919) 962-4783.

Editors

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Workers at an Alabama Honda plant
Courtesy Bob Farley/*Birmingham Post-Herald*

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Planner's Digest

Survey Says: Land Use, Rural & Small Towns High on Readers' Minds

Some of you may remember opening our last issue and finding a blue survey card inside. It's been a few years since we surveyed our readers about their interests and received good updates on their whereabouts. And, we confess that our institutional memory can run short, as master's students in our department run this journal, editors only work a maximum of two years on the job (when one of us is not traipsing around Europe for the semester or doing some other wonderful project).

We do care about what our readers wish to know; therefore, we collected and tabulated the results of our mail-in interest survey. Our table below posts the results.

Coastal Issues	5
Community Development	21
Development Areas	7
Disaster Issues	5
Economic Development	16
Environmental Issues	17
Historic Preservation	18
Housing Issues	8
Information Systems	5
Land Use	26
Planning Methods	1
Public Partnerships	12
Regional Issues	8
Rural/Town Issues	23
Transportation Issues	11
Urban Design	13
Other	3

Figure 1: *Mail-in interest survey results by category; figures indicate number of responses*

Land use issues posted the highest number of returns among our readers. Given the number of planners who engage in land use related activities, the results were not too surprising. We were somewhat surprised by the strong showing for rural and small town issues, though, which posted the second highest number of returns. North Carolina and other Southeastern states contain many small towns, and obviously a number of planners care about making these areas better places to live. In that vein, community development and economic development posted a significant number of responses. However, preserving our heritage and protecting our environment also scored high among our list of choices. Despite our current recession, maintaining these treasured places endures as a priority for this sample of our readership.

Although we had already received our articles for this issue before obtaining these results, we believe this issue mirrors the interests demonstrated in the survey. Three of the four articles deal specifically with land use issues, particularly fiscal impacts, annexations, and land use impacts of tax breaks. Rural and small town issues weigh heavily in this current journal as well. This issue features alternative land use models in a rural-based county in Western North Carolina, tax incentives in rural Virginia, and the evolution of an automotive industry cluster in rural Kentucky. Economic and community development needs and environmental impacts are also covered in the context of these articles.

We will continue to use this information in future issues. In the meantime, if you have an interest in publishing an article, please see the guidelines in this issue. For more information, you can contact us via email at:

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or phone us at (919) 962-4783.

Thank you once again to those of you who responded to our survey!

Carolina Planning Journal Editorial Staff

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Greenfield Pioneers in the American Southeast: Empirical and Game-theoretic Perspectives for Planning

Initial core "pioneers" in greenfield industrial districts tend to develop crucial supplier networks around them, leading an unusual set of private and public incentives. Highlighting findings from previous research, empirical evidence from the Kentucky Toyota plant suggests that a core plant will spark the formation of a sharable supply network, differentiated by criticalness of parts, distance from plant, and timing of establishment. However, these links may result in skewed private and public incentives, which are modeled in a game-theoretic framework. If left to market solutions, potentially significant intra- and inter-regional market failures may emerge, leading to potential justification for planning intervention.

Eric Thompson, Stephan Weiler and Terutomo Ozawa

I. INTRODUCTION

This paper is a condensed version of research recently published in the journal *Planning and Markets* (Weiler, Thompson, and Ozawa, 2001), which explores the motivation, context, and incentives inherent in greenfield industrial site development. This shorter paper highlights the research's principal findings, with particular emphasis on the empirical and game-theoretic perspectives. The combination of empirical findings, which assesses the clustering process around the Georgetown, Kentucky Toyota plant, with game-theoretic analyses, highlighting the private firm and public agent decision dynamics, provides unique insights into the opportunities and challenges of evolving industrial districts.

Empirical evidence shows the clear formation of a sharable supplier network around Toyota in Kentucky. The establishment of a core plant sparked a network of dozens of suppliers, with potential positive spillovers to following carmakers. In addition, such clustering may lead to substantial benefits for the focal local economies (Fujita & Hill, 1995). Given this unusual situation, the paper then considers the pitfalls of private and public incentives in the context of the resultant inter-and intra-regional through market outcomes. Associated market failures could create justifications for planning.

II. THE CASE OF THE KENTUCKY TOYOTA PLANT CLUSTER

In their study of Japanese-affiliated automotive manufacturing plants across the United States, Smith & Florida (1994) found that new firms in particular preferred locations near established Japanese automotive assemblers. Given these broad results, the recent growth of international automobile manufacturing in the southeast provides a useful case study setting in which to assess the evolution of a new industrial district. We use the case of the Toyota plant in Kentucky to understand both the specific and more general implications of such greenfield site development.

The primary hypothesis of the core plant perspective is that a core assembler should

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either bring or attract a network of suppliers around the assembly plant. Furthermore, given the necessity of just-in-time (JIT) practices to modern competitiveness, clustering of the most critical part suppliers should occur most quickly and most closely around this core plant as well. The supplier network of the Toyota Motor Corporation assembly factory in Georgetown, Kentucky provides a useful example of this phenomenon. The assembly plant has attracted a significant number of new suppliers to the area, particularly from Japan, thereby contributing to the base of regional suppliers. The assembly plant also has utilized a number of existing suppliers, partly present in the region, to supply previously established regional assembly plants. These assembly plants include the Ford Motors facility in Louisville, Kentucky; the General Motors Corvette facility in Bowling Green, Kentucky, and the Nissan Motors facility in Smyrna, Tennessee.

a) Analytical Framework

The empirical analysis will examine the development of the supplier network for this Toyota plant both geographically and over time. In particular, the analysis will assess whether critical suppliers for Toyota: 1) tend to be located closer to the assembly plant; and 2) be more likely to be new investments. The hypothesized proximity of the suppliers and their more recent establishment are driven by the critical just-in-time inventory and delivery needs required by the core plant. This projected relationship is schematically illustrated in Figure 1. Criticalness, which represents the asset-specificity of CPA for Toyota, is measured on the vertical access, and distance of suppliers from the core plant is measured on the horizontal access. A negative relationship between criticalness and distance is hypothesized; more critical and asset-specific part suppliers are expected to be located closer to the Toyota assembly plant. In addition, those critical suppliers locating near the core plant are likely to be more recently established to satisfy JIT delivery needs.

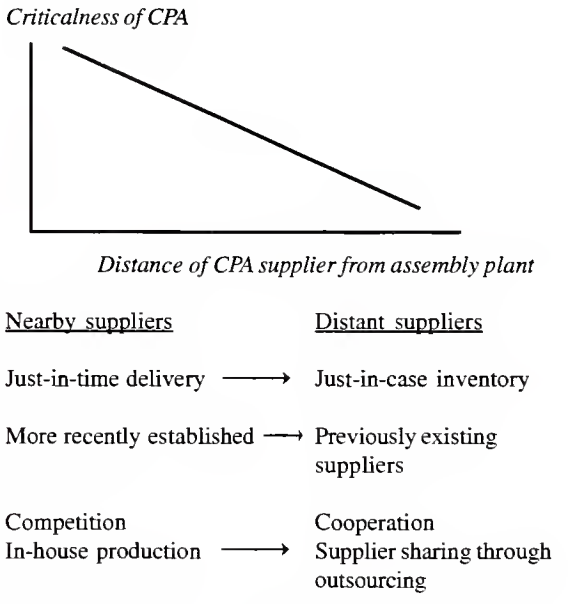

Figure 1: *Criticalness of CPAs as a locational determinant of suppliers.*

b) Data and Methodology

A measure of "criticalness" will be developed for the parts produced at each Toyota supplier plant. Distance from the plant in miles will then be measured, as will the age of the plant, in order to determine whether the plant was opened before the Toyota assembly plant, or afterwards.

A data set was assembled of regional parts suppliers for the Toyota sedan assembly plant in Georgetown, Kentucky. The region was composed of the states adjacent to Kentucky: Illinois, Indiana, Missouri, Ohio, Tennessee, Virginia, and West Virginia. Data was gathered on the location, age, and type of car part produced for each of 118 parts suppliers located in the Commonwealth of Kentucky and adjacent states.[1] Of the 118 regional suppliers, 38 were located in Kentucky, 26 were located in Ohio, 17 in Indiana, 15 in Illinois, and 12 in Tennessee.

The supplier list was for production in

1992. Thus, the supplier list developed reflects what existed in Kentucky and adjacent states five years after assembly began at the Toyota facility in 1987, and seven years after the site was chosen in 1985. The list of suppliers was not acquired directly from Toyota, which naturally limits its release of information about its suppliers. The list was based on the report *The Economic Significance of Toyota Motor Manufacturing, U.S.A., Inc., in Kentucky* (Haywood, 1992). The report published information about the city of location and type of part supplied by each supplier. Further study was used to identify the beginning year of operation, and where possible, more specific information about the type of part produced.

One advantage of this list from 1992 relative to a current list is that the 1992 list only represents suppliers to production at the Georgetown assembly plant. A more current list could include suppliers to plants in either Georgetown, KY or Buffalo, WV, where engines are now built. Further, the list from 1992 reflects substantial development in Toyota's supplier network. It is worth noting that, as of 1998, the number of Kentucky suppliers had only risen from 38 (in 1992) to 56, indicating that, at least for the Kentucky supplier network, the network was already well developed by 1992 (Haywood, 1998).

Each regional Toyota parts supplier also was assigned a rank for "criticalness." This term reflects the extent to which the part supplied is custom designed for Toyota sedans assembled at Georgetown. Criticalness was ranked at a value of 0 through 2. A value of 0 was assigned to purchases of basic products, which are products of use in a number of industries besides auto assembly such as raw steel, solder, chemical coatings, and paints. Purchases that are specifically auto parts but tend to be standard across many makes and models such as tires, wheels, window glass, and engine belts were assigned a ranking of 1. Auto parts likely to be specialized for a particular make and model such as stampings, trim, seat assemblies, engine tubing, throttles, and break and suspension components received a ranking of 2. The average value for criticalness among all 118 regional parts suppliers was 1.1. A higher ranking indicates that the supplier is more critical/specific to the plant.

c) Results

The network of regional parts suppliers to the Toyota Motor Corporation's Georgetown plant follows the expected geographic and temporal pattern. Plants producing parts more regional suppliers that are new facilities built during or after 1987, both by overall and

	"Criticalness" Ranking			
	0	**1**	**2**	**Overall**
Number of Suppliers	37	34	47	118
Share of Suppliers that Began Operations During or After 1987	5.4%	14.7%	40.0%[1]	21.2%
Average Distance of Suppliers From the Georgetown, KY Assembly Plants (in miles)	224	245	157	204

[1] *Statistically different from ranks 0 and 1 at the 5% significance level.*

Table 1: *Summary Statistics on Location and Age of Regional Parts Suppliers to Toyota Motor Corporation by "Criticalness" Ranking*

criticalness rank. Suppliers with a high criticalness rank are much more likely to have been built after 1987. Of suppliers with the highest "criticalness" rank (2), 40 percent were built during or after 1987, compared to just 15 percent for Toyota suppliers with a rank of 1, and 5 percent for suppliers with a rank of 0. Plants that began operation in 1987 or later were much more likely to be among the list of most critical Toyota suppliers.

Table 2 also shows the average distance of regional suppliers from the Toyota Georgetown assembly facility. The distance is illustrated for regional suppliers overall and for the three different criticalness ranks. The regional suppliers that are ranked most critical are located nearer to Georgetown, Kentucky. In particular, parts suppliers producing the most critical ranked parts were on average located from 70 to 90 miles closer to the Georgetown plant than parts suppliers producing less critical parts. Looked at another way, supplier plants located closer to an assembly plant are much more likely to be suppliers of critical parts.

To test this proposition, an ordered logit regression was run relating "criticalness" rank with distance from the Georgetown assembly plant. Results of this regression are illustrated in Table 3. Regression results indicate that the likelihood of a supplier producing the most "critical" parts (rank of 2) falls with distance. The negative and statistically significant coefficient indicates that as suppliers move further from an assembly plant the suppliers are less likely to supply the plant with the most "critical" types of parts. Figure 2 illustrates the likelihood that a supplier making a most "critical" part falls from 55 percent for a supplier plant located within one mile of an assembly plant to a probability of 32 percent for a supplier plant located 300 miles from an assembly plant.

In sum, the results discussed above indicate that Toyota tended to procure more critical parts from plants that are located closer to the Georgetown assembly plant, and from newer parts suppliers opened concurrently with or after the Toyota assembly plant began operations. Toyota has organized a supplier network where the most critical parts are made nearby, and by new suppliers attracted to the region. Toyota brought critical suppliers to Kentucky and adjacent states to build its supplier network, but also utilized the existing network of regional suppliers. This behavior is consistent with just-in-time manufacturing and co-design between supplier and assembler for customized parts.

III. TWIN MARKET FAILURES?

Once established, such an assembler-supplier network should provide both cost-efficiency and near-customer-specific market niches for participating car companies, as well as a likely local economic boom. Yet the intra- and inter-regional dynamics make such a structure potentially difficult to initiate, through

Variable	Coefficient	Standard Error	Z-statistic	Probability
Distance from Assembly Plant	-.003202[1]	.001307	-2.45	.0143
LR Index = .02397				

[1] Statistically significant at the 5% level.

Table 2: Results of an Ordered Logit Regression of "Criticalness" and Distance of Supplier from the Georgetown, KY Assembly Plant

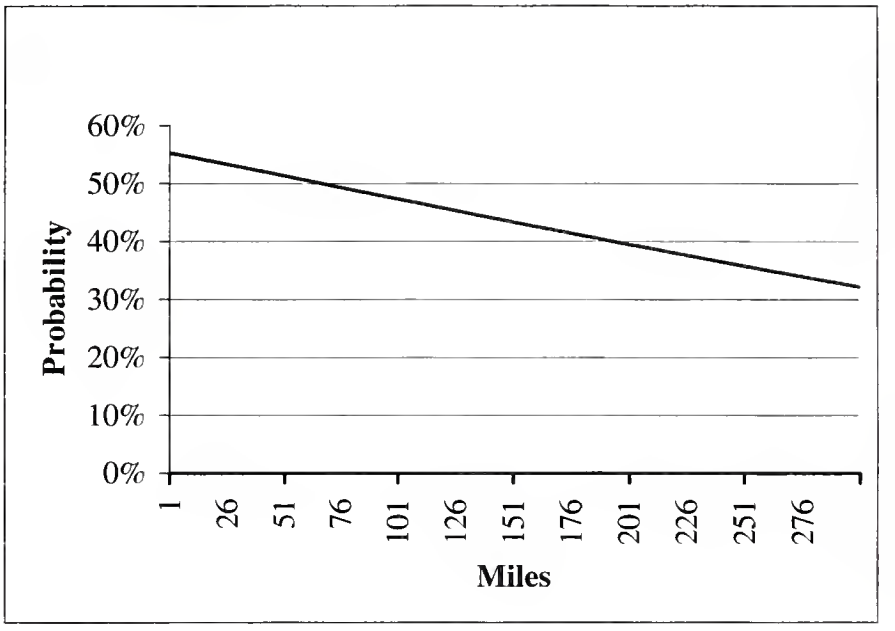

Figure 2: Probability of a Supplier Making the Most "Critical" Part (Rank=2) Given Distance of Supplier from the Georgetown, KY Assembly Plant

the skewing of both private and public incentives. The resulting twin set of market failures may thus slow the rooting and growth of the new industrial district, as well as distort the optimal pattern of private and public resource allocation. Justifications for planning intervention may thus emerge.

a) Pioneering Incentives

The potential returns to a region's economy of becoming the seedbed of both the core plant and the expanding web of supplier firms are considerable. Particularly given the high value-added character of this market segment, the inflow of export earnings and multiplied manufacturing employment could significantly influence even the most marginalized area's economic fortunes. Spillovers from such enterprises to the local (service and retail) sector are likely to be exceptionally large, given both the high-wage employment structure that develops and the reverberating needs for proximate service and retail outlets (Bartik, 1991). The "spoils to the victor" region would flow handsomely for several generations.

However, this benevolent cycle of core-to-supply network development requires a spark by some first-moving firm. The nature of this market segment necessitates that a minimal supplier network be established alongside the pioneer assembly plant. The first-mover thus must invest in the crucial supply comerstones. Initial sunk costs are tremendous. Furthermore, such infant networks have very few of the anticipated scale and scope economies, which only develop in tandem with the overall growth of the regional assembler/supplier network. Note that if such a self-reinforcing pattern of growth indeed takes place, the eventual established web of suppliers will reduce the costs for all core followers.

This strategic interaction can be modeled in a game-theoretic framework. Pioneers

must weigh the risky entry into a potentially innovative location, which will shoulder them with significant supplier network costs but could also yield sizable profits. Yet other firms might also eventually consider probing the promise of the new district, shouldering the supplier burden while costlessly illuminating the true viability of the area for that initial entrepreneur. Each player thus needs to consider the strategic implications of their actions. The market failure develops in the divergence between private and social benefit-cost considerations.

A two-person, non-cooperative game theory model can be helpful in understanding this critical first-mover decision; a similar structure was used to understand obstacles to urban redevelopment (Weiler, 2000). Based on the Weiler, Thompson, and Ozawa (2001) application to potential investment in greenfield sites, it is clear that private actors will not fully incorporate the overall social impact of their actions. Marginal private investments could nevertheless yield projects with considerable net social benefits. *The private market may thus underprovide investment to a promising greenfield area.* A potential pioneer may wait (eternally, in this game) for another private investor to test the potential site first. Property rights approaches to this problem, such as buying adjacent land in anticipation of possible future capital gains, is fraught with considerable risk alongside an even greater initial capital outlay.

b) Public Incentives

While Toyota's success indicates that greenfield sites can indeed be profitable even with the sizable peripheral supplier investment, situations that have less obvious a priori viability may be neglected. Public support may thus be justified in motivating pioneers to invest, mitigating the noted market failure and enhancing broader social welfare. However, clearing that pioneering hurdle by the justifiable support of the public sector is likely to amplify the second market failure. The spoils of "winning" the greenfield siting of a new auto production center, with both core manufacturers and their supplier network, could substantially bolster a regional economy's fortunes (Fujita & Hill, 1995). The regional multiplier, where a further regional boost is provided by new export dollars re-spent locally, is likely to be enhanced by precisely the nature of the desired intra-regional production cycle.

These rewards can be expected to spawn, and have in fact produced, effective bidding wars between previously cooperative regional neighbors, given the spoils that accrue to the victor. Interestingly, these infamous incentive packages rank low in a firm's appraisal of an area's desirability for greenfield investment (Hansen, 1993; Kieschnick, 1981). Firms know that they can, and do, generally force matching packages between competing regions (Jenn & Nourzad, 1995). In such a Bertrand-type "price" war, the final effect of the bidding process would logically shift *all* the potential economic rents to the firm, since those rents are the effective bonus that a region would inherit with a successful bid. The originally efficiency-justifiable inclusion of the public sector is likely to only worsen this situation, since public officials would include the net social spillovers to the community, and thus be willing to proffer public funds to attract the desired firm.

Forthcoming work by Ellis and Rogers (2001) shows that in a game-theoretic context such a situation turns local economic development into an inter-regional prisoner's dilemma. The application to the present greenfield scenario is particularly noteworthy. All regions would be better off cooperating by not entering into an inter-regional competition for the new plant and its satellites. However, since the individual region's incentive at that point is to proffer just a little extra incentive to win the contest, the cooperative solution quickly unravels into its suboptimal non-cooperative

counterpart. As hypothesized above, such bidding is likely to degenerate into a Bertrand-type price war. The result of such a Bertrand game is that all of the potential regional private and public gains would be bid away, leaving the winning region bereft of its spoils even before the arrival of the prize.

In addition, global efficiency losses could result, since the bidding process might distort the location decision of the firm away from the most efficient production point. The short-run political benefits of acquiring a target industry rarely match the true longer-term stream of benefits. Political considerations are thus likely to skew proper assessment of benefits, which can themselves be difficult to determine accurately. Furthermore, officials rarely discount the inevitable additional costs of a new plant, such as congestion and infrastructure wear (Blair, 1991). Public sector efficiency itself could be lost as well, as the myopic focus on the prize industry shifts resources away from other public needs that may have greater merit based on opportunity costs.

IV. PLANNING IMPLICATIONS

This paper has explored the formation of a new industrial district and its potential impact on market outcomes through the example of the automobile assemblers and suppliers in the southeastern United States. The modern characteristics of the industry necessitate establishment of an intricate network of suppliers, whose criticalness to the production process determines the closeness of their ties and their sites to the core plant. The statistical results from the Toyota plant in Kentucky confirm this trend. Honda's recent announcement of a new assembly factory in Alabama reinforces this paper's perspectives. This new core plant will explicitly take advantage of the now well-established supplier network, while still making the unusual decision to fabricate its most crucially-specific component, the engine, in-house at the very same factory as its assembly line (Bradsher, 1999).

However, the creation of other new industrial districts may pose potentially considerable challenges to market-based solutions, as shown by the game-theoretic model. The combination of substantial pioneer risks and potentially large social spillovers may interact to potentially hurt not only the local community but also the wooed industry through efficiency distortions. The two market failures in fact reinforce each other, since the first-mover problem can justify public intervention on its own efficiency merits. But the non-cooperative incentives of regions to attract such core-and-network structures are further increased by the consequent inclusion of the public sector and its social benefit calculus, which may effectively shift not only private but also (poorly specified) social spillover benefits to the prospective plant. Even the latter may be hurt in its own market by establishing itself in an inefficient site, as relative resource prices are skewed by the blizzard of incentives.

In sum, such industrial districts pose distinct challenges to traditional market approaches, as their outcomes may be socially sub-optimal. Such situations suggest possible planning solutions for these intertwined market failures. While inter-related, the public and private aspects of the noted market failures need to be addressed separately given their differing sources. The public incentives problem, whereby each region has an incentive to (over)compete for the focal investment, could be addressed by more cooperative arrangements above the state level. Sites could be coordinated to maximize global efficiency by promoting the site offering the greatest net social benefits. By distributing the net gains to regions under consideration, the cooperative solution could net the broadest gains for all areas.

Yet, even given the removal of this public incentives problem, private pioneers are likely to underinvest in promising areas given both the

core-plus-network investment costs and advantages of following such pioneering efforts. This private incentives problem could be mitigated by tapered incentive structures to offset the initially high but declining divergences between private and social benefits of investment. Pioneer assemblers are supporting broad supplier networks with minimal scale economies. In addition to the fixed costs of supplier plant investment, the consequent high average costs of components leads to substantially lower private net benefits than the social benefits of the new economic activity in the region. Subsidies to close this gap are thus most justified in these pioneering cases. However, as more assemblers arrive, scale economies of the supplier network take hold, with consequent reductions in the private vs. social benefit/cost gap, because costs are significantly reduced for each ensuing follower.

Endnote

[1] An initial list of 121 suppliers was identified. However, 3 were removed from the group because they did not appear to be auto parts. The three included the suppliers of gasoline, paper products, and adhesive inserts.

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The Fiscal Impact of Alternative Land Uses in Macon County

This paper uses the hedonic method to analyze the effect of land use change on local government property tax revenues and costs of property tax-supported services. A statistical model estimates the property value for alternative land uses which is used with the current property tax rate to estimate tax revenue for a typical parcel in each of three land use categories: residential, commercial, and agriculture/open-space. The per parcel average cost of tax supported services is calculated from county expenditures. Using these values a revenue to cost ratio is calculated for each land use and a scenario assuming the development of thirty acres of open space is discussed.

Jeremy L. Jones and Susan B. Kask

I. INTRODUCTION

Rural areas in the U.S. are continuing to change rapidly with continued population and economic growth and restructuring. With this rapid growth come changing land uses and new populations in rural communities pressuring local governments to provide new services. However, sufficient revenues may not be available to support needed or wanted services. Therefore, an important element in the planning process for local government is to monitor the fiscal vitality of a community with respect to the revenues needed and the services required. This study develops a hedonic model that can help a community understand the fiscal impact of alternative land uses.

Fiscal impact studies have been conducted in communities for many years (Margolis, 1956; Burchell and Listokin, 1995). Studies have often found that residential development imposes greater costs to a community than the tax revenues they generate (Brabec, 1992; Miller, 1992; Burchell and Listokin, 1995). Furthermore, studies have found that a community can potentially maintain current tax rates, or minimize tax increases, by maintaining land as open space rather than promoting development. As communities become more computerized and the need for understanding how they are changing increases, fiscal studies are becoming an increasingly important tool for community planning. (Fausold and Lilieholm, 1996)

Fiscal impact studies can demonstrate whether tax revenues will shift uniformly with government expenditures as land usage changes. When more taxes are necessary, but the campaign promise of "no new taxes" looms over officials' heads, the logical alternative often seems to be more development to increase the tax base. Common sense would seem to dictate that more businesses and more residents would constitute more tax revenues. However, time after time, fiscal impact studies have shown that while more commercial and residential development does increase the tax base, it also

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increases the demand for schools, public works, road maintenance, emergency services, and local government. In other words, service expenditures may exceed the additional revenues generated for the community

Results from these fiscal impact studies do not suggest that development is bad. Development certainly has its advantages such as spurring higher wages, providing jobs, and more and improved public services. Instead these studies simply disprove the myth that a larger tax base will ease the tax burden for the individual taxpayer. If development is to be pursued as a local government policy, it should not be done to solve a tax crisis.

Typically, fiscal impact studies analyze the impact of a particular project, or change in a particular land parcel (Oakland and Testa, 1995). Some studies use a municipal approach for analyzing revenues and expenditures. This paper uses the hedonic method to estimate property values, and thus tax revenues. The models are applied to Macon County, North Carolina.

Section 2 discusses the hedonic method and the sample properties used for the study. Section 3 describes the property value models and the results used for the fiscal impact analysis. Section 4 presents the cost of services allocation. Section 5 provides the fiscal impact analysis with the scenario analysis. Policy implications are discussed in Section 6. A summary and final conclusions are given in Section 7.

II. METHOD, PILOT SITE AND SAMPLE

Method

Two approaches are generally used for fiscal impact analysis: the Municipal Approach (hereafter MA) and the Single Property Approach (hereafter SPA)[1]. This study uses a variation of the SPA method for two reasons: the availability of data by parcels and the potential for this approach to better differentiate the impact for different types of development, e.g., cluster versus sprawl residential development. The SPA approach typically analyzes only a single property; however, this study uses a sample of single properties to develop a statistical model that estimates property value for a parcel using property characteristics. This hedonic approach is commonly used to analyze property values in the economic literature (e.g. Parsons, 1992; Kask and Maani, 1992) and is applied similarly in this paper. The approach provides results similar to the MA approach in that it evaluates an average property rather than a particular property. However, it does so capturing the complexities of particular properties, a feature lost in the MA approach. Using the hedonic approach, property values can be estimated for particular parcels thus capturing the benefits of the SPA approach. Cost of services in this study are allocated across land uses and estimated on a per parcel basis. Revenues received are compared to cost of services per parcel indicating whether a type of land use imposes on average additional costs to a community over the tax revenues collected.

In this study only property tax revenues are used to calculate the fiscal impact revenue-cost ratio. Although it is true that as population increases we expect sales revenues and other revenue sources (state allocations, etc.) to increase for the county, it is not possible to connect these types of revenues received to a parcel of property, or a type of land use. Therefore, this study subtracts the user-fee based services, services funded by other sources of revenue such as grants and state allocations, and sales[2] tax revenue-supported services from the county budgets. Instead, this study focuses specifically on the county property tax-supported services in the cost estimates.

The revenue cost ratio uses an average cost per parcel compared to average tax revenue. This is done primarily due to data constraints. Typically, economists argue that marginal costs and marginal revenues should be compared to ensure efficient resource allocation

for each decision. Although we can use the estimated property value equations to calculate marginal revenue from a change land use for a single parcel, we have no means to estimate the marginal cost. This, of course, could be done on a case-by-case basis by county officials. If marginal cost and average cost are similar then the results from this study are equivalent to a marginal analysis of a land use change. If marginal and average costs are not similar and marginal costs are lower than average, as is experienced by many counties, then local governments face a problem commonly associated with large electric utilities or other *natural* monopolies: high initial fixed costs (e.g. infrastructure for water and sewer systems or schools) and lower operating or marginal costs. The result is that the additional cost of adding a user is small, while the average cost of servicing them is high. When a for-profit natural monopoly faces this cost situation, they often resort to average cost pricing, as marginal cost pricing yields economic losses for the firm. Although marginal cost may be the preferable information in many decision contexts, average cost provides valuable information to a county fiscal study, especially when the state of county finances, surplus or deficit, are the primary interest of the study.

Finally, in this study the unit of analysis is a "parcel" of land. Most of the county's costs depend on population levels and taxes are collected based on the population's ownership of parcels. As population increases, the number of parcels typically increases as parcels are subdivided and the configuration of parcels changes. Since we are interested in land use change due to population change, using the "parcel" as the basis of measure for costs and revenues is appropriate.

Pilot Site

Macon County was chosen as the pilot site in Kask (1996) because of its growth, its similarity to other counties in the region, and the availability of data. Continued population growth[3] in the county and changes in county services suggested an update of the 1996 study would be valuable.

Given that Macon Ccounty lies between Atlanta and Cherokee, NC (site of a growing gaming industry and gateway to the most visited national park in America), and a four-lane highway now exists between Macon County and Atlanta, the high rate of growth is expected to continue. Similar to other western counties, the mountain topography of Macon County increases the costs of providing services to residents. For example, the mountain terrain requires the county to maintain three bases for emergency medical services. The EMS bases are located across the county with one in the Northwest Nantahala region, one in the central Franklin area, and another in the Southeast Highlands district. Another similarity with other western counties is the large percentage of county lands owned by the State and/or Federal government. In Macon County, 46.2 percent of the land is owned by the U.S. Forest Service, which means that there are 258,000 acres on which no taxes are paid. The county does receive Payments In Lieu of Taxes (PILT) and a percentage of the timber sales, but this normally does not amount to more than one dollar per acre, an amount that is nowhere near what the county would receive if the land were taxed according to the current tax rate. Despite this tax status, the county still provides fire, police, and emergency medical services to these areas. Finally, Macon County is also similar to other counties in that it has a variety of income brackets with a median family income of $30,900 in 1996, and a mix of land uses; however, rural and conservation lands predominate[4]. (North Carolina)

Macon County has computerized its data records and published much of it on line at ***www.dnet.net/macondb***, making it more readily available for analysis. As more counties move in this direction, fiscal analysis using the hedonic method becomes more feasible. It is

Variable Name	Description
Acreage	Number of acres in a parcel
Age	Ages of structures on a parcel measured in years
Number of bedrooms	Number of bedrooms in a residential property
Barn/basement	Binary variable representing the presence of a barn or basement as indicated by a value of 1
Brick	Binary variable representing type of building material for parcel structure. Brick is indicated with a 1, all other materials are given a value of zero.
Land and Building value	Assessed value of properties in sample measured in 2000 dollars.
Location 2 (Holly Springs)	Binary variable representing property location in Holly Springs
Location 5 (Highlands)	Binary variable representing property location in Highlands
Location 8 (Cartoogechaye)	Binary variable representing property location in Cartoogechaye
Log	Binary variable identifying log built homes
No. of rooms	The number of rooms in primary property structure
Square feet	Square footage of property structure
Tax amount	Amount of tax paid in the previous year

Table 1: Variable Descriptions

important to note, however, that computerized data is not necessary for the implementation of the method presented in this report.

According to county officials, the additional cost of service from another residential or commercial customer is very small due to the high fixed (sunk) costs incurred by the county from serving a large group of part-time summer residents. County managers believe they are able to handle the current population growth when considering the major expenses of education and emergency services since they already have excess capacity due to the preparation levels required for the annual summer migration of 50,000 vacationers. The needed capacity already exists so the addition of new permanent residential or commercial parcels may have an insignificant additional cost at this point in time.

The Sample

Sample properties in three categories, residential, commercial/industrial, and open space/farmland[5], were selected randomly from identified areas in the county[6]. Identified areas include the high-income areas of Highlands and Franklin, lower income residential areas of the extreme Northwest and Southwest corners of the county, and the average middle income areas. Properties were chosen to equally represent the areas around the EMS districts, the fire districts, and the high schools. A final sample of 824 residential properties was selected from county property maps. Given that there is only one area in the county with easily identifiable commercial developments[7], as many properties from this group were selected as possible. This gave a final sample of 40 commercial properties in the county. Although this is a small number of commercial properties, the county manager agreed that it was representative of the county since residential property continues to develop more rapidly than com-

mercial property. Finally, open space properties were selected for a variety of sizes (large and small tracts) and across locations in the county, with a sample of 728 finally selected. Table 1 provides a description of variables used in this study and descriptive statistics for each variable in each sample are given in Table 2.

Data on property characteristics and taxes paid in 2000 for each property were collected. In addition to capturing characteristics of each property, general location variables were used to capture neighborhood characteristics. Macon County has one school district. School Superintendent Lonnie Crawford stated that there might be dissimilarities in the structures of the different schools, but was quick to add that an identical high quality education is offered at every Macon County school. Emergency Service Administrator Warren Cade stated that EMS equipment and trained personnel were equivalent throughout the county. County manager Sam Greenwood felt that there was no difference within the county in regards to the crime rate. The Sheriff's department, Franklin's police force, and the Highland's police department were considered indistinguishable when considering equipment, personnel, and response time. The three departments are believed to be more than enough to handle the low crime rate. According to county offices, the new $3 million jail was recently built to replace the old one and not because of a growing crime rate. Although we don't expect differences in these areas as stated by the various county representatives, we continue to use location variables to capture other potential neighborhood variation.

Qualitative characteristics such as whether a home is brick, frame, or log, or where a property is located are represented with binary variables. These variables indicate whether a characteristic occurs for a chosen property and then compares the sample to a reference case. For this study, the reference case for residential properties is a frame home, without a barn or

	Residential N=824			*Commercial N=40*			*Ag/Open Space N=728*		
Variable Names	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**
Acreage	3.12	0.04	198.	9.23	0.23	105	4.22	>1	268
Age	20.27	>1	130	8.25	>1	44	ND	ND	ND
No. Bedrooms	2.58	1	6	ND	ND	ND	ND	ND	ND
Barn/Base	0.5	ND	ND	0.03	ND	ND	0.01	ND	ND
Brick*	0.06	ND	ND	ND	ND	ND	ND	ND	ND
Land and Building Value	108,971	4,230	1,310,170	124,042	100	1,436,330	35,732	100	838,800
Loc2* (Holly Springs)	0.13	ND	ND	0.03	ND	ND	0.23	ND	ND
Loc5* (Highlands)	0.04	ND	ND	ND	ND	ND	0.003	ND	ND
Loc8* (Cartoogechaye)	0.17	ND	ND	0.13	ND	ND	0.15	ND	ND
Log*	0.03	ND	ND	ND	ND	ND	ND	ND	ND
No. Rooms	5.31	1	12	1	1	6	ND	ND	ND
Square Feet	1,752	350	10,405	1,202	288	11,408	1.98	0	864
Tax Amount ($)	552	55	5,376	367	0.47	1,691	150	0.45	3,659

ND = No Data for this variable

* These are binary variables and thus the values given represent the percent of the sample that has this characteristic. For example, 6% of the residential sample is brick homes.

Table 2: Sample Descriptive Statistics

	Residential		*Commercial*		*Ag/Open Space*	
	Coefficient	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	**t-stat**
Intercept	1982.47	0.43	-17049.83	-0.81	27099.49*	12.00
Loc2	15799.41*	4.09	122357.10	1.26	-9516.47*	-2.25
Loc8	7994.49*	2.33	65826.76	1.43	-164.48	-0.03
Loc 5					-83697.93*	-2.52
Brick	5400.84	0.97				
Log	19955.84*	2.55				
Barn/Base	20725.18*	7.76	42967.61	0.44	57960.48*	3.89
Square Feet	43.39*	20.94	23.87*	3.50		
Age	-360.91*	-4.74	3,083.16*	2.17		
Acreage	3732.30*	20.96	8,082.31*	10.67	2444.43*	24.86
# Bedrooms	2694.63	1.56				
Adjusted R^2	63%		83%		48%	
F-statistic	154		32		134	
Standard error of the estimate	36072		94739		46,696	
No. of observations	824		40		728	

* Significant at the 95 percent confidence level or higher

Table 3: *Models used to Estimate Property Values*

basement, located in area one (Franklin township[8]). The open space reference property is also located in area one.

III. PROPERTY VALUE MODELS

Three property value models were developed for a typical parcel of land in each land use category. In each case, the level of property value is the dependent variable with characteristics of the properties as the independent variables. The general form of the three models is given in Equation 1 where vector Z represents the characteristics of a property.

$$\textbf{Property value} = f(z_1, z_2, \ldots, z_n) \qquad (1)$$

Property characteristics might include acreage, location, building characteristics, etc. Results for each model using data for each land use category are given in Table 3. More detailed location variables were not used due to the belief of county officials that Macon County services were provided equally across the

	Residential	**Commercial**	**Ag/Open Space[1]**
Estimate	$90,415	$111,678	$37,415
Lower Bound	$18,270	$0	$0
Upper Bound	$162,559	$301,156	$138,807

[1] The open space model for 1996 included both vacant lands and agricultural lands. In the 2000 data set all open/space is classified as agricultural lands. The vacant land category no longer exists in the county data and county staff was unable to explain what happened to this category. However, review of the data suggests that these properties were incorporated into the three land use categories (residential, commercial and ag/open-space).

Table 4: *Property Value Estimates with Confidence Bounds*

county regardless of the specific area.

A goal of the analysis was to obtain a high degree of predictive power demonstrated by small confidence bands. Unfortunately, the large standard errors of the estimates decrease the predictive power of the models. However, the models are useful to indicate the trends occurring in Macon County and do provide estimates that illustrate issues county officials would be wise to consider.

In addition to predictive models, we were also interested in the impact of each property characteristic on the potential property value estimate. Therefore, a high level of explanatory power was also desired. The models do provide acceptable levels of overall explanatory power and confidence in the individual coefficients. Various model forms were tested to determine if a better fit of the data was possible[9]. In the end the linear form was selected as it provided the best fit to the data. The model results are given below in Table 3.

Using the results from Table 3, we estimate the property values from a typical reference parcel[10] in each land use category. Using mean values for the continuous variables in Table 2 and the reference case, we can describe the typical reference parcel. The typical reference residential parcel is a 20-year-old frame home with 1,752 square feet, 3 bedrooms, without a barn or basement, on 3.12 acres located in Franklin township (Location 1). The estimated property value for this residential home is $90,415. However, since this is an estimate and not the true value, we use the standard error of the estimate to determine the confidence bands in which the true property value will fall with a 95 percent confidence level giving a low property value estimate of $18,271 and a high estimate of $162,559.

Using the typical reference open space property with 4.22 acres, we find an average property value estimate of $37,415, with a low of $0[11] and a high estimate of $130,807. For the typical reference commercial property with 1,202 square feet on 9.23 acres and that is 8.25 years old we estimate the average property value at $111,678 with a low estimate of $0[12] and a high of $301,715.

Using the results above we can add or subtract from the estimated value in response to an alternative property characteristics. For example, for residential properties located in Location 2 (Holly Springs) we would add $15,799.41 to the property value estimated getting $106,214. A barn/basement adds another $20,725 giving a property value of $126,939. A barn added to open space property increases the value by $57,960 to $95,375. Moving the open space property to Location 2 decreases the property value by $9,516 to $85,859. A summary of the results is

	Residential		*Commercial*		*Ag/Open Space*	
	Estimate	**Sample***	**Estimate**	**Sample***	**Estimate**	**Sample***
Estimated Property Value	$90,414.77	$108,971.00	$111,677.70	$124,042	$37,414.98	$35,732.00
Ave. Property value / 100	$904.15	$1,089.71	$1,116.78	$1,240.42	$374.15	$357.32
Property tax rate	$0.43/ $100	$0.43/ $100	$0.43/ $100	$0.43/ $100	$0.43/ $100	$0.43/ $100
Average Property tax	$388.78	$468.57	$480.21	$533.38	$160.88	$154.00
Low Property tax	$78.56	$18.18	$0	$0	$0	$0
High Property tax	$699.00	$5,634.00	$1,294.96	$6,176.00	$562.47	$3,606.00

* Sample values are given for the mean property value and for the minimum and maximum property values in the sample.

Table 5: *Calculating Property Tax*

	Residential	Commercial	Ag/Open Space
Education	✓		
Government Administration	✓	✓	
Public Safety	✓	✓	✓
Public Services	✓	✓	✓
Social Services	✓		
Health Services	✓		
Recreational and Cultural	✓		
Economic Development		✓	

Table 6: *Allocation of Services across Land Uses*

given in Table 4.

Using the property value estimates we calculate three revenue cost ratios for each land use category. The tax revenue estimate for any property can be estimated simply by multiplying the estimated property value by the given tax rate.

Table 5 demonstrates how the tax revenue is calculated for the cost to revenue comparison. The property tax in fiscal year 2000 was $0.43 per $100 of value. The estimated value of the property is divided by 100 and then multiplied by 0.43. Note there are zero values in two categories for the low tax estimate. The tax amounts reported in the descriptive statistics show zero taxes paid by some open space properties and some commercial properties. This can be for either of two reasons: they may be a road side easements which have negligible taxes or for which the tax payer may have paid taxes in advance and thus not paid this year, or there may be a tax deferment. In the former case, the result occurs because of a low property value; in the latter two cases it occurs due to tax policy. In this study the zero tax assessment is a result of lower bound property value estimate. This occurs because of the small sample size and large standard error of the estimate for this model.

How do different types of residential development affect the property value? For example, do we want to encourage development with large tracts and few small houses, or smaller tracts with larger houses? The results from Kask (1996) suggested that clustered[13] housing was more likely to generate higher tax revenues than sprawl housing. In the new sample of data we see that the impact of an additional bedroom on property value is $2,695, where as an additional acre adds only $3,732 to the property value. This suggests that an additional acre adds $1037.00 more to the tax base than does a bedroom. However, when we translate this into tax revenues we have only a $45.00 difference in tax collected from an additional bedroom versus and additional acre. At this time, it appears that cluster housing and sprawl housing have similar impacts on revenues collected. However, given that often the cost of services to sprawl[14] development is often greater than the cost of services to clustered housing, it then still remains that from a fiscal standpoint, clustered housing likely remains a better option for Macon County. The county may want to encourage cluster housing that often imposes lower costs for county services. However, if the demand for sprawl development is greater relative to cluster development, higher property values for the latter may result, yielding higher tax revenues. This study does not capture this effect.

IV. COST OF SERVICES

In order to determine the impact of alternative land uses on the county's fiscal status it is important to account for all revenues the

county receives and to allocate those revenues to the various programs. However, the county receives revenues from a variety of sources. Consequently, not all services provided by the county are supported by property tax. Some services are fee-based and others are supported by special grants and state allocations. In order to avoid subsidizing tax-supported services with fee-based and/or grant-supported services, it is important to remove these latter services from our analysis. Therefore, as mentioned above, this report compares the property tax receipts with the property tax-supported services in order to determine the fiscal impact of land use changes instead of including the entire budget.

By following the example set in similar studies by the American Farmland Trust, this report distributes the expenditures of the local government into simple yet usable categories. The county expenses have been divided into eight crucial groups: *Education, Government Administration, Public Safety, Public Services, Social Services, Health Services, Recreation and Cultural,* and *Economic Development.* Each group is divided accordingly among the three land uses as shown below in Table 6.

Ag/Open Space is only responsible for two types of expenses. Public safety is required in the form of police and fire protection and public services are necessary in the form of agricultural extension services. Commercial properties also create public safety and public services expenses as well as being responsible for some of the general administration expenses and all of the economic development costs. Residential properties are allocated the education, health services, recreational and cultural, and social services as well as the remaining portions of the public safety, public services, and general administration expenses.

Fee-based costs covered directly from the users of a service are subtracted from these categories ensuring that only the property tax-supported portion of service budgets are allocated across the three land uses. Costs that could not be allocated to a particular land use or cost category were appropriated to all the groups based on their proportion of parcels relative to all parcels within the county. When a cost is allocated across only residential and commercial properties, it is allocated based on the proportion relative to the total number of parcels in the two categories. The proportional relationship of land uses within Macon County is displayed below in Table 7.

Table 8 presents the final allocation of the County's cost of services for each land use. Note that commercial properties have the lowest cost allocation. This result occurs due to the low proportion of commercial properties in the county and the limited services provided to these properties. This trend is expected to continue since residential growth is continuing at a faster pace than commercial development. One possible explanation for this is the growing number of vacation and retirement homes. The values in Table 8 were used to calculate the revenue-cost ratios presented in the next section.

	Residential	Commercial	Ag/Open Space
Number of Parcels	22,000	1,350	16,543
Percentage of total parcels	55%	3%	42%
Percentage of residential plus commercial	94%	6%	

Table 7: *Proportions used for Cost Allocations*

V. FISCAL IMPACT ANALYSIS

Using the three per parcel revenue values estimated for each land use in Section 3 and the cost allocation in Section 4, we can derive revenue cost ratios that show the dollars received in tax revenues per dollar of tax supported costs expended for the average parcel for each group. Table 9 presents these results.

The results in Table 9 show that in the case of the *typical* reference residential and commercial properties, the county is receiving less in revenues than they are incurring in costs. Assuming alternative property characteristics such as a barn or basement, or another location, still leads to the same result[15], with revenues closer to costs. These results suggest the county would not want to receive tax payments of less than the average cost of services per residential parcel, which is $676.11, nor receive less than $1026.16 for average commercial properties, nor less than $141.24 on average per open space parcel. However, using this study's data we find that 90 percent of commercial properties and 76 percent of both the residential and open space properties pay tax amounts less than the average per parcel cost of services in each category, respectively. The above suggestion is a form of average cost pricing for local government and is based upon a "user pays" principle, which may or may not be appropriate for communities when allocating cost of services.

Finally, despite documented results that vacation and retirement homes are usually "tax positive" (e.g. Brighton, 1997 and Chazal, 1995), Macon County officials felt that this was not representative of their county. While the vacation homes require only a seasonal demand of services, the increase in population from a normal 30,000 to an estimated 80,000 during the peak vacation months more than negates the money surplus seen due to low demand during the rest of the year. Since two-thirds of the year's work occurs during the summer, county officials felt that preparation for the tourist season, the necessary extra man-hours, and the capital needed to provide for such a large increase in population cost the county too much to allow them to recognize vacation homes as "tax positive." Considering the large number of retirement homes in Macon County, the increase in demand for police and emergency

	Total	Residential	Commercial	Ag/Open Space
Education*	$292,800	$292,800		
Government Administration	$6,252,983	$5,877,804	$375,178	
Public Safety	$2,958,711	$1,627,291	$88,761	$1,213,072
Public Service	$2,740,212	$1,507,117	$82,206	$1,123,487
Social Services	$2,076,050	$2,076,050		
Health Services	$2,553,999	$2,553,999		
Recreation	$939,329	$939,329		
Economic Development	$839,165		$839,165	
Total ($)	$18,653,249	$14,874,390	$1,385,310	$2,336,559
Total (%)		79.74%	7.43%	12.53%

* Public education in North Carolina is supported primarily with state allocations from income and other taxes. Local government pays for buildings and can supplement teacher salaries with sales taxes. This figure includes only the contribution from property taxes for this fiscal year.

Table 8: *Total Cost Allocations for Macon County by Land Use Categories*

	Residential	Commercial	Ag/Open Space
Per Parcel Cost Allocation	676.11	1026.16	141.24
Tax Estimate	388.78	480.21	160.88
Lower Bound	78.56	0	0
Upper Bound	699.00	1294.96	562.47
Rev/Cost Ratio-Average Tax Estimate	0.58	0.47	1.14
Ratio-Lower Bound	0.12	0	0
Ratio-Upper Bound	1.03	1.26	3.98

Table 9: *Fiscal Impact of Alternative Land Uses*

medical services for the elderly nullifies the savings recognized from education services, according to county officials.

VI. SCENARIO ANALYSIS

A scenario analysis of a 30 acre parcel that could either remain in Ag/Open space, or be converted to ten three-acre residential lots shows that the county would lose $532.00 from county coffers on the residential conversion, but would gain $290.00 into county coffers if the land remains in ag/open space use. Although this is a stylized example, it illustrates the application of the models and the potential cost of development to the county in services needed by the population residing in developed areas. Larger homes generating higher property values would likely generate sufficient revenues to cover costs of county tax-supported services.

VII. POLICY IMPLICATIONS

As the study shows, based on the current tax rate of 43 cents per $100 of property value, the county is currently spending more than it is taking in *on average* for residential and commercial properties and is just covering costs on open space. The large confidence bands reported in this study show that at the upper-bound estimates all land uses are covering costs. However, as reported earlier, only 10 percent of commercial properties and 24 percent of residential and open space actually pay tax amounts greater than the average costs for their respective categories. Thus the upper-bound estimates may not be adequate indicators of current conditions in the county. The results of this study concur with previous studies debunking the myth that increases in land development will improve a community's fiscal integrity by increasing the tax base. Although increasing the tax base may improve a community's fiscal position, there is no guarantee that this will occur.

Our result is more important when we consider the many other costs incurred by the county from land development that are not considered in the budgeting process. These other costs include the negative impacts of land use changes on the county's rural character and decreased water quality from increasing population and land development. This study does not include these costs in the cost estimates.

While modest expenditures for soil conservation are included in the county's budget, these do not account for all the costs of conserving water quality. As the number of commercial and residential properties continues to increase, the number of construction and grading sites, pavement, manicured lawns, as well as the need for increased sewage treatment all increase. The impact from these increased activities is a reduction in water quality from erosion and effluent in the form of the runoff of petroleum products and fertilizers, problem

septic systems, etc. These costs are not addressed in the county budgeting process and are also not paid by those who impose these costs on the community. Furthermore, if sprawl development predominates in the county, increased costs of water and sewage infrastructure will occur from the increased development. These costs are also not accounted for in the budgeting, or decision processes, for land use in the county.

The role of tourism in the economy is another important factor to consider when considering land use changes in Macon County. During the summer, vacationing families more than double the county's population. Tourists flock to Macon County every year because of its rural, rustic charm. If development continues to consume the Ag/Open space parcels, especially along the major roadways (Wear and Bolstad, 1998), then the tourism market may suffer. Once the beautiful mountain scenery has been altered through development, it may take many years to return to its original beauty. Therefore it is important for a community to decide if its rural charm is important enough to influence land use changes.

VIII. CONCLUSIONS

Macon County is in an enviable position in that it currently has significant amounts of open space. Thus the county is ahead in the planning process and is positioned to make proactive decisions about growth in its community as compared to many other communities that are reacting to their diminished quality of life. Although Macon County is ahead of the game, it must take stock of its current position to be sure to avoid problems found in other regions of the U.S. This fiscal impact study can provide information for the decision processes facing the county.

According to Macon County officials, county employees will handle the next property appraisal. In the past, the county has contracted an outside firm to handle property appraisals. Macon County can use this report with its property appraisals to evaluate the impact of significant land use changes on the county budget. The county officials responsible for the next assessment will be aware of the costs associated with land use changes and will be able to design appropriate planning and tax strategies. For example, county officials could consider different tax rates for different land uses. One option might include the assignment of a lower tax rate to open space; since open space has lower overall costs, this policy would provide a benefit to those owners in return for the savings they provide the county. This study may provide a catalyst for developing creative ideas of how to better allocate the cost sharing of county services across land uses, as well as account for the intrinsic benefits received from the land uses. CP

Endnotes

[1] Municipal Approach analyzes total expenditures and tax revenues by category of land use. The Single property Approach analyzes a particular property. (See Miller 1992)

[2] Sales taxes are earmarked for specific services.

[3] According to the North Carolina Department of Commerce, Macon County is the fastest growing County in western North Carolina, with a population growth rate of 15.1% between 1990 and 1996

[4] See the 1992 Macon County Land Use Plan for more detail on land uses in Macon County. Rural land uses include agriculture, forestry, and mineral extraction. These lands are also considered low density and relatively undeveloped. The conservation category includes lands such as ridge tops, areas with excessive slope, flood plains, wetlands, and areas with high potential for wildlife.

[5] Open Space was defined as undeveloped or agricultural properties with no more than a shed barn present on the property.

[6] Although a time-series cross-sectional data set may provide better property values estimate this

could not be done because Macon County does not keep past property values on record.

[7] Most of the commercial development in the County is in the Franklin city limits. This study looks specifically at county services and taxes and thus no observations from the city were considered.

[8] Although a property is in the Franklin Township it is not necessarily in the City of Franklin. None of our properties are located in the city, although many are in the township.

[9] Double log, log linear and quadratic forms were tested; however, the linear form provided the best fit to the data.

[10] A typical reference parcel is defined as one with mean values for each of the continuous variable characteristics and with zero values for each of the binary variables (0 or 1 values).

[11] A zero property value is somewhat feasible since roadside easements are part of this data set and they have very low values, with the lowest in the sample at $100.

[12] In this case a zero appears less feasible, however, the commercial data set also includes a minimum property value of $100 in the sample.

[13] Clustered housing occurs when homes are clustered together on smaller lots and may or may not be surrounded by undeveloped property.

[14] A sprawl development is one where homes are spread out on larger lots, or are separated by undeveloped properties.

[15] A barn or basement adds $89.00 to tax revenues and Location 2 (Holly Springs) adds $68.00 to revenues, increasing tax revenues by $157.00.

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Land, Lines and Levies: A Study of Voluntary Annexations in High Point, NC

The City of High Point used voluntary annexations to grow in area and population during the 1990s. Careful planning is needed to insure the effective provision of municipal services. Conducting modified cost-benefit analyses is one way to gauge the financial costs and revenues associated with potential annexations. This report describes the methodology underlying a computer application that can forecast the financial costs and benefits associated with proposed voluntary annexations. The results constitute a tool that High Point's council and management can use to manage growth.

Suzanne Dowling, Jeffery Maxim, John Quinterno, and Najeema Davis Washington

URBAN GROWTH IN THE TRIAD

North Carolina's Piedmont Triad, encompassing the cities of Greensboro, Winston-Salem, and High Point, experienced rapid growth during the 1990s. In fact, the population of the Greensboro-Winston-Salem-High Point Metropolitan Statistical Area (MSA) grew by 19.2 percent between 1990 and 2000.[1] With 1,050,304 residents, the MSA is the 37th largest in the United States[2], while Greensboro, Winston-Salem, and High Point respectively are North Carolina's third, fifth, and eighth largest cities.[3] Moreover, the Triad is growing in a low-density rather than high-density manner.[4] This means that economic expansion in one part of the Triad exerts a ripple effect on neighboring areas. The interaction of development in High Point and growth in Greensboro, for instance, has spurred residential construction in northern High Point.

High Point has not been immune to the Triad's growth. Between 1990 and 2000 the city's population rose by 23.5 percent, bringing the total population to 85,839.[5] During the same period, High Point's land area increased by 12 percent.[6] Voluntary annexations have served as a mechanism for this growth. Furthermore, during the 1990s the city concluded six annexation agreements with neighboring jurisdictions.[7] These legal documents define the territories that High Point may or may not annex within a specific period. As a result of these agreements, High Point could increase its incorporated land area from 50 square miles to 92 square miles. High Point's potential for growth, coupled with the demand for growth created by the Triad's expansion, may spark the development of land within High Point's annexation area. This would lead to a rise in the number of petitions for voluntary annexations.

VOLUNTARY ANNEXATION IN HIGH POINT

Article 4A of Section 160A of the General Statutes of North Carolina allows municipalities

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This project was conducted by four MPA students from the Institute of Government at The University of North Carolina at Chapel Hill: ***Suzanne Dowling, Jeffery Maxim, John Quinterno,*** *and* ***Najeema Davis Washington.*** *Funding came from the City of High Point and a grant from the Center for Public Service at the University of North Carolina at Chapel Hill.*

to extend their boundaries through annexations. The General Assembly believes that annexation is essential for managing growth and providing effective governmental services. Moreover, the General Assembly permits two types of annexations: involuntary and voluntary. Although the statutory processes regulating involuntary and voluntary annexations are similar, the two annexation types differ in a key way. Voluntary annexations are intitated by landowners who petition to join a municipality, whereas the government initiates involuntary annexations. Though the end result is the same – the annexed land is added to the tax rolls and receives municipal services, involuntary annexations often become spirited political issues.

High Point has the legal authority to annex land voluntarily and involuntarily, but as a matter of custom, the city only conducts voluntary annexations.[8] In broad strokes, High Point's current system consists of four steps. First, a person who owns land outside of the city limits but within the annexation area files a petition with the City Clerk.[9] The petitioner typically is a developer who intends to build on empty land. By joining the city the developer receives such governmental services as police and fire protection and access to the municipal utility system. Second, after the petition is received, the city prepares service plans for the proposed annexation. To accomplish this, High Point asks relevant city departments to prepare cost estimates. Third, the estimates are sent to the Planning Department for evaluation and a technical review. Finally, after the city publishes a notice of intent, the City Council conducts a public hearing and votes on the proposed annexation ordinance. If the proposal passes, the land becomes part of the city on the effective date specified in the ordinance.

LIMITS TO THE CURRENT SYSTEM

High Point's current system for evaluating proposed voluntary annexations contains six weaknesses:

1) Ignored Revenues – The current system assumes that annexations only will cost the city money. While annexation requires the city to service an area, this does not imply that the annexation automatically will result in a monetary loss. Annexed areas generate property, sales, franchise, and gas revenues, and it is entirely possible that an annexation will generate more revenues than costs. Yet the existing system ignores revenues even though the General Statutes require revenue estimates.

2) Short-Term Focus – The current process emphasizes the short-term over the long-term. Annexations that initially appear costly actually may be lucrative a few years later. The benefits simply may not materialize until the entire development is completed. Similarly, an annexation that appears inexpensive in the short-term may contain hidden costs four or five years hence.

3) Incomparable Costs – There currently exists little agreement about how departments should prepare cost estimates. Consequently, what one department includes as "operating costs" may differ from what another department includes. The inconsistencies prevent comparisons across departments.

4) Missed Costs – Since there appears to be confusion regarding which departments should provide cost estimates, the current system misses relevant costs. Not all affected departments are developing cost estimates and service plans. Part of this problem is attributable to the estimate forms used by High Point. The form is identical for all departments and fails to provide either the specific information that some departments need to compute accurate costs or the flexibility to tailor estimates to the specific nature of the department's work.

5) Obscured Costs - The current system evaluates annexations on an individual basis, thereby missing the aggregate costs of multiple annexations. One annexation in a certain area may appear inexpensive, but if 20 distinct parcels in the same area are annexed over time, the combined annexations may necessitate a capital expenditure (e.g. a new fire station).

6) "Irrelevant Process" – A feeling exists among some departments that management fails to use the current system for decision making. Some departments therefore provide only rudimentary cost estimates and service plans.

Refining the System

High Point's management team has recognized the current system's weaknesses and the need for more accurate financial estimates. To address this challenge, High Point recruited a team of MPA students from the Institute of Government at The University of North Carolina at Chapel Hill (UNC-CH) to study the city's annexation process.

Funded by the City of High Point and a grant from UNC-CH's Center for Public Service, the team spent the first half of 2001 studying High Point's annexation process, the procedures used by peer cities, and alternate ways of analyzing annexations. The team also consulted with academics who study annexation, budgeting, and financial issues facing local governments in North Carolina. As a result of this study, the team designed a computer spreadsheet that High Point can use to conduct modified cost-benefit analyses of proposed annexations. This report both documents the methodology used to develop the modified cost-benefit analysis and serves as a user's manual for the city employee(s) responsible for the computer application.

METHODOLOGY AND PROCESS

The project began when a team of MPA students from UNC-CH agreed to develop a methodology that High Point's council and management can use to assess the costs and benefits associated with voluntary annexations of land.

The project's first stage involved gathering information on High Point. Staff members provided information regarding High Point's annexation process. Additionally, the team researched High Point's municipal services, revenue streams, and costs. This information was derived from such sources as city employees, the Fiscal Year 2001 Budget, and the North Carolina Performance Measurement Project.

Next, information regarding voluntary annexations in North Carolina was gathered. The General Statutes were reviewed, and academics at the Institute of Government were consulted. Additionally, the team contacted several peer cities in North Carolina to see how they analyze annexations. Most of the cities were in positions analogous to High Point's, though Durham has made a conscious effort to analyze proposed annexations. The team therefore considered the strengths and weaknesses of Durham's approach.

After gathering information, the team considered various ways for analyzing potential voluntary annexations. The ultimate suggestion was to design a computer spreadsheet that High Point could use to conduct modified cost-benefit analyses (see below). The goal was to create an application that embodied 3 principles:

1) Versatility – The application should possess the versatility to analyze the various types of annexations that could occur in High Point.

2) Simplicity – The application should possess the simplicity to permit one municipal employee to use it quickly and efficiently.

3) Flexibility – The application should possess the flexibility to adapt to changing economic realities.

The team then identified the revenues and costs most directly affected by voluntary annexations. The relevant departments were contacted, and the appropriate officials were interviewed. Based on the information gleaned from the interviews, coupled with the data contained in the budget and the North Carolina Performance Measurement Project, the equations for the modified cost-benefit analysis were developed. Preliminary copies of the spreadsheet then were sent to the relevant departments for comment.

The project's final stage consisted of preparing this document detailing the methodology and spreadsheet and submitting the product for review. The team also trained the municipal employee(s) responsible for the application and presented recommendations to High Point's management team.

WHAT IS MODIFIED COST-BENEFIT ANALYSIS?

Cost-benefit analysis (CBA) is a decision-making tool that evaluates a policy according to some criterion of efficiency.[10] The analytical technique involves identifying and quantifying (typically in monetary terms) all of the costs and benefits associated with a particular policy option. The total costs and benefits then are discounted to determine their present values. Finally, a decision maker compares the result to the criterion (the typical financial criterion is at least to break even), and if the result satisfies the criterion, the policy is deemed worthy.

In its pure form CBA considers every cost and benefit related to a policy option including intangible factors like the environment and quality of life. However, it often is extremely difficult to identify and quantify every conceivable cost and benefit. Is it possible, for instance, to assign a financial value to a clean environment? How much is a clean environment worth, or for that matter, how much is a livable community worth?

In response to this problem, the team from UNC-CH developed a modified cost-benefit analysis that focuses solely on the financial costs associated with annexations.[11] Instead of considering every possible cost and benefit, the CBA addresses only financial ones. The methodology estimates both how much it will cost High Point to provide certain services to proposed annexations and how much the city can expect to receive in revenues. The analysis is further limited by a problem unique to CBA in the governmental sector: the lack of natural markets for governmental services.

The public purposes services (e.g. police, fire, and sanitation) provided by a government have no natural markets. Since the government is the sole provider of these services, it is difficult to ascertain true costs. For example, it is impossible to say how much fire protection should cost since the government is the only provider of fire protection. The only guidance governments have for assessing costs comes from benchmarking projects like the North Carolina Performance Measurement Project that allow cities to view their cost relative to other cities.

LIMITATIONS AND ASSUMPTIONS

Like any analytical method, CBA contains certain weaknesses that prevent perfect predictions. CBA also necessitates the use of certain assumptions that may limit further the technique's predictive power. Consequently, decision makers using the spreadsheet designed for High Point need an understanding of the limitations and assumptions inherent in the model.

Limitations

The following five factors limit this analysis of High Point's voluntary annexations:

1) Exclusion of Intangible Costs - As mentioned earlier, this CBA only captures the financial costs and benefits associated with annexation. Non-financial factors are excluded, yet these intangible costs still

exist. For example, a straight financial analysis might show that it is financially profitable to open a nuclear waste facility in High Point, but the financial benefits may be dwarfed by the non-monetary environmental and community costs. When making decisions, city management and elected officials need to consider more than just the costs documented in this study. This CBA captures just one set of factors that decision makers should consider.

2) Lack of Decision-Making Criteria – CBA evaluates policy options according to some criterion of efficiency, but determining what that criterion should be, at least in a governmental context, is a political act. What determines if an annexation is desirable or not? A proposed development of affordable housing, for instance, may be financially unprofitable, but if a neighborhood needs affordable housing, the non-monetary benefits might far exceed the monetary ones. When deciding upon a proposed annexation, decision makers also must decide upon the appropriate criteria for judging.

3) Trade-Off Between Precision and Longevity – When forecasting costs and revenues, a trade-off between precision and longevity exists. Costs and revenues can be assessed accurately in the short-term, but accuracy declines as the timeline grows. A financial prediction for one or two years in the future is more reliable than one for 20 years hence. Yet short-term estimates are less useful for city planning than long-term estimates. This trade-off should be kept in mind when evaluating the numbers generated by the spreadsheet.

4) Trade-Off Between Specificity and Flexibility – The CBA developed for High Point aims to be flexible enough to analyze any annexations that may occur within the city's annexation area. As a result, specificity is sacrificed. More accurate results could be obtained by developing an analysis for a specific annexation, but the model then would not be applicable to other annexations.

5) Data Limitations – The quality and availability of data also limits the study. When exact figures were unknown, imprecise, or unavailable, estimates were used. The use of estimates may affect the model's accuracy.

Assumptions

Five assumptions guide this CBA:

1) Optimal Service Levels – This model assumes that the service levels provided by city departments during Fiscal Year 2000 are the optimal ones. The model assumes, for instance, that the number of police officers working for High Point during FY'00 was ideal, but that may or may not be true. These are questions that can be answered best by High Point's management team and elected officials. Nevertheless, a benchmark year for costs and services was needed, so FY'00, being the last complete fiscal year, was selected.

2) All Areas Receive Equal Service – This model assumes that annexed areas will receive the same levels and quality of services provided to existing neighborhoods. This model also assumes that no impact fees are charged to developers to defray the costs associated with integrating the annexation into the city.

3) Only Services Directly Affected are Considered – Like any government, High Point provides an array of municipal services. Some of these services are general ones provided for the common good while others are operated like businesses (e.g. electric). Since the government's business

activities are financially self-supporting, they are excluded from this CBA. Similarly, services that are provided in return for fees (e.g. building inspection) are excluded since the fees theoretically cover the costs. Instead, this CBA focuses on the costs and revenues associated with the provision of governmental services directly affected by annexation. Table #1 identifies the key costs and revenues.

4) Conservative Estimating – This analysis uses conservative financial estimates. This means that when faced with a choice between two cost estimates, the higher estimate is used. Similarly, if two revenue figures exist, the lower figure is used.

5) Five-Year Time Frame – As mentioned previously, this analysis is limited by the trade-off between precision and longevity. Short-term estimates are more precise but less useful for planning purpose, while long-term estimates are less precise but more useful for planning. In response to the problem, this CBA projects costs and revenues over a five-year period. A five-year time frame customarily is used in CBA since projections of less than five years are considered too proximate to be useful, while projections of more than five years are viewed as too imprecise.

USING THE CBA SPREADSHEET

As mentioned earlier, the spreadsheet application that High Point can use to analyze proposed annexations was designed around three principles: versatility, flexibility, and simplicity. The goal was to create an application that one staff member could use to prepare quick and realistic financial analyses of proposed voluntary annexations.

The spreadsheet consists of thirteen interconnected worksheets that organize costs and benefits on a departmental basis. The last sheet is a summary sheet that unites data from the various sheets and computes the net discounted benefits (costs) – the final number representing the anticipated financial gain or loss resulting from the annexation.

In keeping with the principle of simplicity, data only needs to be entered into the first two worksheets – the sheets titled "Constants" and "Data." Entering the information provided by departments on the estimate forms will cause the program to compute automatically all of the necessary values. If the analyst wants to see the precise calculations, he or she can simply click on the appropriate worksheet. Otherwise, the analyst can jump to the worksheet marked "Total" and view the bottom-line estimate.

A RAMBLE THROUGH THE SPREADSHEET

Sheet #1: "Constants" – This sheet contains the citywide values needed to analyze annexations. The sheet contains such data about the city as population, land area, and family size, along with the specific values used by departments. For example, the sheet contains the projection rates used by the Budget Office to project growth in property and sales tax revenues. A general inflation rate also is included. Part of Sheet #1 is pictured at right.

Placing all of these values on one sheet permits the CBA to be updated easily. Each cell contains a cell note explaining from where the value was obtained. At least once a year, ideally around the start of the fiscal year, the constants should be updated to reflect better the realities facing High Point. The values for city population and square mileage, meanwhile, should be updated as often as possible. If the constants are not updated at least annually, the model quickly will become obsolete.

Sheet #2: "Data" – The sheet labeled "Data" is where the information related to a proposed annexation is entered into the computer. Data are entered into the shaded cells, and the information comes from the

City of High Point
Annexation Analysis
Constant Sheet

Section 1: City Constants		
If we are using performance and cost data should we use the pop. # and land area that they give??		
Constants		
Current Fiscal Year		2001
City Population		80,789
City Square Miles		50
Family Size		2.54
Section 2: Financial Constants		
Inflation Factor for Real Property		5%
Inflation Factor for Personal Property		4%
Average Value of Car		$9,000
Cars Per Dwelling		1.5
Tax Rate		0.622
Tax Collection Rate		0.995
Inflation Factor for Sales Tax Revenues		3%
Total Sales Tax Revenue		$6,120,023
	per 1000 residents	$75,753
Powell Bill Per Capita Reimbursement		$25
Powell Bill Street Mile Reimbursement		$1,817
Total Utility Tax		$3,200,095
	per 1000 residents	$39,611
Business Fee		$50
General Inflation Factor		3%
Discount Rate		6%
Section 3: Department Constants		
Police		
Number of Authorized Officers		190
Average Personnel Costs		$42,868
Average Operating Costs		$21,802
Average Capital Costs		$3,810
Factor for E-911 Costs		12%

petition that a landowner files with the City Clerk. In the two places where nominal data must be coded, a cell note explains the codes. These data must be entered properly, or the worksheet will compute erroneous values.

This sheet contains two nuances. First, if the proposed annexation is a residential one, the analyst needs to manually scroll to section 2 of the "Data" sheet. In the column labeled "Number of Dwellings" the analyst needs to enter the number of dwellings present for each of the five years. Second, for residential developments, the analyst needs to scroll down to section 3 of the "Data" sheet and enter the estimated unit price in the proper cell. Part of Sheet #2 is pictured at right.

Sheet #3 "Property" – This sheet automatically takes the information entered into the "Data" sheet and computes the anticipated revenues from the taxes levied on real and personal property. Revenues are projected over five years and are increased each year by the growth factor used by the Budget Office or Guilford County. For instance, High Point currently projects a five percent increase in real property, while Guilford County estimates a four percent increase in personal property.

One difficulty in computing property tax revenues came in estimating personal property revenues. Data limitations prevented the inclusion of accurate numbers regarding the average number of cars per High Point resident and the average value of automobiles in High Point. This information is calculated by Guilford County for High Point, but the numbers were unavailable. The values used by Durham therefore were included.

Sheet #4 "Revenue" – This sheet automatically computes the anticipated revenues from sales taxes, franchise taxes, gas taxes, and business fees. The constants used to compute these values are contained in the "constant" sheet. Part of this sheet is pictured on page 36.

Sheet #5 "Benefits" – This sheet combines and summarizes all of the revenues computed on sheets #3 and 4. The totals on this sheet represent the estimated total benefits expected from the proposed annexation.

Sheet #6 "Police" – Estimating the costs associated with police services was difficult due to the varied nature of the department's work. Therefore, this analysis uses the February 2001 edition of the North Carolina Performance Measurement Project to establish the FY'00 ratios of officers per square mile and officers per 1,000 residents. These ratios are applied to the proposed annexation to determine service costs per square mile and per 1,000 residents. In keeping with the use of conservative estimating, the higher cost is selected. Note that the General Statutes view an increase in police service proportional to the population increase attributable to an annexation as an acceptable service plan.

Sheet #7 "Fire" – Since the calculations needed to compute fire costs are rather complex, the spreadsheet breaks the analysis into discrete steps. The key factor is whether or not a voluntary fire department (VFD) currently serves the annexation area. Depending on the answer entered into the "Data" sheet, either Scenario I or Scenario II applies.

Scenario I: VFD Currently Serves Annexation Area: If a VFD operates in the annexation area, then one of three strategies can be pursued by the city.

1) The city could negotiate a service contract with the VFD. In return for a payment equal to the tax levies lost through annexation, the VFD would continue to serve the annexation area. The payment is calculated by dividing the tax value of the entire VFD area by 100 and multiplying the quotient by the fire tax levy per $100 valuation.

City of High Point
Annexation Analysis
Data Entry Screen

Part 1: Descriptive Data

Annexation Number	Annexation Name	Map-Block-Lot-ID	Acerage	Existing Population	Contiguous	County	Proposed Effective Date	Proposed Zoning
00-00	IOG	53-628-50	70	0	Yes	1	7/1/2001	3 (if #3 go to section 3)

Part 2: Financial Data

Time Line	Land Valuation	Building Valuation	Total Valuation	Number of Dwellings	Parcel Population	Non-State Street Miles
At Annexation	$50,000	$0	$50,000	0	0	0
Year 1	$50,000	$0	$50,000	20	51	4
Year 2	$52,500	$252,500	$305,000	40	102	8
Year 3	$55,125	$330,125	$385,250	55	140	10
Year 4	$57,881	$432,881	$490,763	75	191	12
Year 5	$60,775	$460,775	$521,551	80	203	12
Five Year Financial Totals	$276,282	$1,476,282	$1,752,563			

City of High Point
Annexation Analysis
Sales, Gas, Utility, and Business Fee Revenues Worksheet

	Fiscal Year 2001	*Fiscal Year 2002*	*Fiscal Year 2003*	*Fiscal Year 2004*	*Fiscal Year 2005*	*5 Year Total*
Section 1: Sales Tax Calculations						
Sales Tax Revenue Per 1,000 Residents	$75,753	$78,026	$80,367	$82,778	$85,261	
Parcel Population	51	102	140	191	203	
Total Sales Tax Revenue	$3,848	$7,927	$11,227	$15,769	$17,325	$56,097
Section 2: Gas Tax Calculations (Powell Bill)						
75% Allocation Based on Per Capita Population						
Per Capita Reimbursement Rate	$25	$26	$27	$28	$29	
Parcel population	51	102	140	191	203	
Subtotal for Per Capita	$1,289	$2,655	$3,760	$5,281	$5,802	$18,787
25% Allocation Based on Non-State Street Miles						
Reimbursement Rate per Street Mile	$1,817	$1,872	$1,928	$1,985	$2,045	
Number of Non-State Street Miles	4	8	10	12	12	
Subtotal for Street Miles	$7,268	$14,972	$19,277	$23,826	$24,541	$89,883
Total Gas Tax Calculations	$8,557	$17,627	$23,037	$29,107	$30,343	$108,670

2) This city could service the annexation directly from an existing fire station. High Point also would pay a portion of the VFD's debt. Two different costs are associated with this strategy. This first involves the additional cost to the overall operating budget of the fire department, expressed as a cost per square mile. Second, the city must pay a portion of the VFD's debt. To determine the payment, calculate the ratio of the tax value of the annexation area to the tax value of the entire VFD. Then, multiply the VFD's total outstanding debt by the ratio.

3) The city could service the annexation area directly from a new fire station. Again, the city would become responsible for a portion of the VFD's debt, and there are two related costs. If a new station is built, the average fire cost per square mile is applied to the total square mileage of the annexation area. Second, the debt service payment owed to the VFD is computed in the manner explained above.

Scenario 2: No VFD Serves the Area: If no VFD serves the annexation area, then two possible options can be pursued by the city.

1) This option resembles Scenario 1, Option 2 with the exception that no debt service is owed to a VFD.

2) This option resembles Scenario 1, Option 3 with the exception that no debt service is owed to a VFD.

Note that the computer spreadsheet is designed to choose the most costly option in each scenario to ensure that costs are estimated conservatively. It is possible that another option would cost the city less.

Sheet #8 "Water" & Sheet #9 "Sewer" – Accounting for water and sewer costs associated with annexations proved difficult since High Point operates these services as enterprise funds. Yet, neither fund is totally self-sustaining.

When calculating annexation costs, the Public Services department must supply information regarding the expected service levels. To establish a baseline, the appropriate FY'00 expenses are divided by High Point's square mileage to produce a cost per square mile. The result is prorated over the proposed annexation's square mileage to yield a cost estimate.

Besides operating costs, there are additional costs involved with water and sewer services such as laying larger lines than needed. Moreover, maintenance costs must be considered. These additional costs are added to the baseline, and the sum represents the total estimated expenses associated with the proposed annexation.

Revenues related to water and sewer services come from one-time fees, fixed charges, and commodity charges. The rates depend on whether the parcel is residential, commercial, or industrial. The computer application is designed to handles the variables.

Commodity charges and fixed rates are the revenues that flow from providing water service. The commodity charges are as follows: $1.29 per unit for commercial areas, $1.14 per unit for residential areas, and $1.00 per unit for industrial parcels. Fixed charges were calculated similarly. The assigned rates are as follows: $21.50 for commercial areas, $107.50 for residential areas, and $924.20 for industrial parcels. In addition to the commodity and fixed charges for water, there is a one-time annexation fee applied to annexations in Forsyth, Davidson, and Randolph counties. The sum of the commodity, fixed, and one-time charges equals the water costs associated an annexation.

Sewer costs are computed similarly to the water ones. The commodity charges equal $1.86 per unit, regardless of the type of parcel being annexed. The fixed charges, meanwhile, are as follows: $25.00 for commercial parcels, $80.00 for residential parcels, and $40.00 for industrial parcels. Besides the fixed and

commodity charges, there is an industrial surcharge for two services (BOD and SS); these charges equal $35.06 and $31.16 and apply only to industrial properties.

Sheet #10 "Transportation" - The Transportation Department estimates the costs of the signage and traffic signals required by an annexation. These costs include maintenance and the electricity consumed by traffic signals. Costs vary depending on whether the annexed area is residential, commercial, or industrial.

First, one-time costs for signage and signals are computed. The average citywide cost for each zoning type is computed and prorated over the proposed annexation. Second, the ongoing costs for maintenance and electricity are calculated.

In addition to signage and signal costs, two other transportation costs should be considered. These variable costs are the traffic impact assessment (TIA) studies and costs associated with upgrading a Computer Signal System. Since these costs vary from project to project and may not apply in all cases, the numbers must be estimated individually by the Transportation Department and then entered into the model. Once the variable costs (TIA and CSS) are calculated, they are combined with the one-time and ongoing costs to yield the total transportation cost. [12]

Sheet #11 "Solid Waste" - Service costs vary depending on whether the proposed annexation is residential, commercial, or industrial.

There are two kinds of residential areas for solid waste services, each of which is treated differently: single-family (house) and multi-family (apartment, condominium, townhouse). Trash pickup, which includes yard waste as well as large items such as refuse furniture or refrigerators, for single-family residential dwellings is funded by the general fund and currently costs $100 per residence per year. The city also provides each residence with a small recycling bin, costing $4.

Trash pickup for multi-family residences comes out of the general fund and varies with the number of dumpsters present in the development. A single dumpster generally services between 75 and 100 dwelling units. The city contracts with a waste removal firm at the cost of $14.61 per dumpster per week, for an annual cost of $759.72.

Trash pickup for commercial areas also varies. If the business is small and generates no more than three trash cans per week, then the city may opt to service the business at a cost of $100 per year. There is no trash pickup service for industrial areas, and the enterprise must pay for private carting.

Sheet #12 "Parks" – The annexation costs connected to parks and recreation are virtually impossible to assess at this time. Due to the variability in how parks (both large scale and linear) and recreational facilities (both passive and active) are built, there are no average costs per acre or 1,000 persons to apply to an annexation area, and park costs are not included in the "Total" worksheet.

Sheet #13 "Total" – This worksheet summarizes all of the costs and benefits computed previously by the program. Each year's total benefits and costs are discounted by 6% in order to convert all monetary values into present values. The discounted costs and benefits also are summed to produce a five-year total. Next, the discounted costs then are subtracted from the discounted benefits to produce the Net Benefits (Costs). This number expresses how much the city can expect to earn or lose each year, as well as over a five-year period. A sample of this sheet is included on the previous page.

RECOMMENDATIONS

High Point's difficulties in evaluating proposed annexations mirror those confronting other growing cities in North Carolina. Some of these problems stem from the unique nature of the governmental sector. It consequently is impossible to produce perfectly precise estimates. Nevertheless, the CBA described in this report will permit High Point to conduct more refined analyses. To further enhance the

City of High Point
Annexation Analysis
Total Cost-Benefit Summary

	Fiscal Year 2001	Fiscal Year 2002	Fiscal Year 2003	Fiscal Year 2004	Fiscal Year 2005	5 Year Total
Section 1: Total Revenues From Annexation						
Property Taxes	$198,045	$536,330	$735,451	$1,008,597	$1,104,717	$3,583,140
Sales Tax	$3,848	$7,927	$11,227	$15,769	$17,325	$56,097
Gas Tax	$8,557	$17,627	$23,037	$29,107	$30,343	$108,670
Utility Tax	$2,012	$4,145	$5,871	$8,246	$9,059	$29,333
Business Tax	$0	$0	$0	$0	$0	$0
Water Revenues	$1,291	$1,330	$1,370	$1,411	$1,454	$6,856
Sewer Revenues	$962	$991	$1,020	$1,051	$1,083	$5,107
Total Estimated Revenues	$214,715	$568,351	$777,975	$1,064,181	$1,163,980	$3,789,203
Total Net Revenues	$214,715	$536,180	$692,395	$893,507	$921,981	$3,258,779
Section 2: Total Costs of Annexation						
Police	$31,877	$32,834	$33,819	$37,548	$41,253	$177,330
Fire	$38,953	$23,384	$24,085	$24,808	$25,552	$136,782
Water	$23,148	$23,843	$24,558	$25,295	$26,054	$122,897
Sewer	$26,570	$27,367	$28,188	$29,033	$29,904	$141,062
Transportation	$39,600	$0	$0	$0	$0	$39,600
Solid Waste	$168	$336	$504	$672	$672	$2,352
Total Estimated Costs	$160,316	$107,763	$111,154	$117,356	$123,435	$620,024
Net Costs	$160,316	$101,663	$98,926	$98,534	$97,772	$557,212
Total Net Benefits (Costs)	***$54,399***	***$434,517***	***$593,469***	***$794,972***	***$824,209***	***$2,701,567***

method's utility, High Point could take the following five steps:

1) Tailor the Estimate Forms to the Departments – As mentioned previously, High Point currently asks all departments to prepare cost estimates on a standard form. The form, however, often fails to provide departments with enough information to produce accurate estimates reflective of the department's realities. Instead of using a standard form, specific forms could be developed for each affected department.
2) Consider the Process – High Point should ask itself how to best use the CBA methodology. For instance, is the most logical home for the tool in the Department of Planning or the Budget Office? Also, will efforts be made to refine the tool as new cost data becomes available, or will the application be left as it is? Addressing these process questions will render the methodology more useful.
3) Update the Spreadsheets – The computer spreadsheet needs to be updated at least annually, or the tool will become obsolete. Additionally, departments should work together to refine the numbers and assumptions operating within the model. The more accurate the departmental cost estimates are, the more accurate the CBA's predictions will be.
4) Study Petition Fees – Preparing a cost estimate for a proposed annexation is a process that requires the time of numerous city employees. To help defray these costs, High Point could consider a petition fee. Other jurisdictions in North Carolina require individuals petitioning for voluntary annexations to pay an application fee. Cary, for instance, charges $150. While a fee would not recoup all of the city's costs, it would help offset them.
5) Solicit Departmental Feedback – Some of individuals interviewed for this project appeared wary of it. Their sentiment was that the CBA would not accurately capture their costs. In spite of its limitations, this tool is a sound way for estimating costs and benefits, and at a minimum, it represents an improvement over High Point's current system. However, the model only is as strong as the information being entered into it. If departments feel their costs are not being represented fairly, they should be given the opportunity to suggest improvements. Collective action is necessary to insure the usefulness of the computer spreadsheet.

Endnotes

[1] United States Census Bureau. (*http://www.census.gov/population/cen2000/phc-t3/tab01.pdf*)
[2] United States Census Bureau. (*http://www.census.gov/population/cen2000/phc-t3/tab03.pdf*)
[3] North Carolina State Data Center. (*http://census.state.nc.us/frame_start_pl.html*)
[4] Firestone, David. "The New Look Suburb: Denser or More Far Flung." *The New York Times*. 4/17/01.
[5] North Carolina State Data Center. (*http://census.state.nc.us/frame_start_pl.html*)
[6] Department of Planning and Development, City of High Point.
[7] These agreements are with Greensboro, Jamestown, Davidson County, Kernersville, Archdale, and Randolph County (Department of Planning and Development, City of High Point).
[8] Throughout the rest of this document, the term "annexation" refers to voluntary annexation.
[9] The General Statutes (160A-58) differentiate between contiguous and satellite annexations. Municipalities are limited in the amount of land in satellite annexations they may hold.
[10] This discussion of cost-benefit analysis is based on *Administrative Analysis for Local Government* by David Ammons (1991).
[11] From this point forward the term CBA refers to the modified CBA used specifically in this project.
[12] Formulaically, total transportation costs = (fixed cost per acre * number of acres in proposed annexation)+ (utility cost per acre * number of acres in proposed annexation * 5 years) + (maintenance cost per acre * number of acres in proposed annexation * 4 years).

Virginia's Economic Incentives: Missed Opportunities for Sustainable Growth

This article describes Virginia's current business incentive programs and analyzes whether land use patterns and long-term development effects are considered when providing grant and loan awards. It finds that Virginia does not consider the impact of its economic incentive programs on land use patterns and sustainability. Furthermore, the information publicly available on these programs does not contain sufficient detail on the use of the funds to assess their effect on growth and land use patterns. The article recommends that Virginia consider land use impacts in administering current economic incentive programs by funding growth in locations that are designed to maximize benefits to the surrounding communities. Linda Breggin wrote a larger report, "Virginia Economic Incentives: Missed Opportunities for Sustainable Growth" on which this article is based, for the Environmental Law Institute in 2001.

Linda K. Breggin

INTRODUCTION

This report examines several major economic incentive programs and funds used in the Commonwealth of Virginia to attract new businesses and to support the expansion of existing businesses. Virginia operates a number of programs that provide loans and grants to businesses for economic development and job creation purposes. The programs reviewed in this report provide nearly $30 million per year in government support to businesses.

Although the use of economic incentive programs has increased over the last decade in Virginia and in other states, surprisingly little attention has been paid to the effect of such programs on land use. For example, the effect of economic development subsidies on urban sprawl has only occasionally been addressed in the academic literature or by the media.[1]

This report describes Virginia's current business incentive programs and analyzes whether land use patterns and long-term development effects are considered when providing grant and loan awards. Specifically, it explores the possible link between the provision of government support to businesses and the consideration of the effects of these subsidies and investments on land use, urban and exurban development, and sustainability of the economic and social investment.[2]

The report finds that Virginia does not consider the impact of its economic incentive programs on land use patterns and sustainability. Furthermore, the information publicly available on these programs does not contain sufficient detail on the use of the funds to assess their effect on growth and land use patterns. Although this report does not attempt to evaluate the impact of these programs on growth patterns to date, including their contri-

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bution to sprawl in some parts of Virginia, it does identify the additional information that is needed to make such determinations.

Attention to land use and sustainability effects is critical for assuring that the Commonwealth of Virginia carries out its role under Article XI of the Constitution of Virginia to balance development and conservation of the environment, as well as to assure that State finances are expended in ways that protect Virginia's comparative advantages in a "new economy" environment. Thomas Jefferson counseled that economic prosperity depended on a "due balance between agriculture, manufacture, and commerce," while also warning that each generation should not through its choices encumber the earth to the detriment of future generations.[3] Similarly, wise stewardship of the Commonwealth's resources should include attention to the land use and sustainability effects of subsidies.

Encouraging sustainable growth can also be a positive step in retaining and attracting businesses. Quality of life is becoming an important factor in site location. Businesses understand that sustainable growth can help them maintain the long-term competitiveness and prosperity of their businesses and the communities in which they are located. For example, many corporations recognize that traffic congestion is a serious impediment to business. Accordingly, sustainable growth can complement and even foster economic growth goals.

The report recommends that Virginia consider land use impacts in administering current economic incentive programs by funding growth in locations that are designed to maximize benefits to the surrounding communities. Virginia officials have a variety of options available to them for taking land use impacts into account in allocating funds. Possible approaches include giving preference to proposals that take sustainable land use and development into account, requiring sustainable land use as an element of these programs, disclosing impacts and potential impacts and advantages, and determining the amount of funding based in part on sustainable development criteria.

Furthermore, Virginia could make a substantial contribution to its competitiveness and to the corporate perception of Virginia as a cutting-edge "new economy" state by using a public process to identify key factors for the management of impacts on land use. The public, the business community, and local government officials should be given an opportunity to help select the factors that, in addition to statewide economic development and job growth, are considered in Virginia's economic incentive programs. The factors could then be adopted as part of incentive program guidelines or help inform legislative changes to the programs.

Lastly, this report recommends that Virginia establish new programs that are specifically aimed at fostering sustainable economic development. Such programs could provide incentives to companies to locate in Virginia, and for Virginia businesses to expand, in a manner that is consistent with principles of sustainable development.

The Commonwealth is missing a significant opportunity to take into account sustainable growth patterns in its current incentive programs. Some or all of the funds awarded through these programs could help assure that these investments are also contributing to the sustainability of the Commonwealth's communities and its environment.

ECONOMIC INCENTIVES AND GROWTH CHALLENGE

Virginia and the Use of Economic Incentive Funds

States across the country use economic development funds to attract and maintain

businesses. Incentive programs vary from state to state, but over the last decade many states have adopted such programs in an effort to compete with other states for the jobs and revenue that businesses provide. Incentive programs typically are designed to reduce specific business costs, such as taxes, cost of capital, land, facility financing, training, and upfront operating costs. These subsidies are provided to businesses in a variety of ways, depending on the program, and may include direct cash payments, assistance with relocation or expansion costs, income tax credits, or credits to the firm's payroll tax. The amount of funds dedicated to economic incentive programs varies by state. A recent report estimated that in the aggregate, state governments spent approximately $10-$11 billion in 1997 on economic incentive efforts.[4]

The Virginia General Assembly has established many economic development incentive programs over the last twenty years. This report only focuses on those programs that provide loans and grants to businesses, although there are several other types, including corporate income tax incentives, industrial development bonds, community development block grants, infrastructure programs, and enterprise zone designations. In total, the Virginia economic incentive programs examined in this report provided nearly $30 million to businesses in 1999.

Virginia's early grant and loan incentive programs focused on small businesses and economically depressed areas. For example, the Virginia Small Business Financing Authority, which oversees several loan reserve programs for small businesses, was established in 1984. Similarly, the Virginia Coalfield Economic Development Authority, which encourages development in the coalfields region, was established in 1988.

A new type of subsidy program was initiated in the 1990s with the establishment of the Economic Development Contingency Fund and the Governor's Development Closing Fund. These Funds were then combined in 1996 to create the Governor's Development Opportunity Fund, a deal-closing fund used to attract new businesses. In 1999, the Virginia Investment Partnership Grant Fund, which provides incentives for existing businesses, was created. In 2000, the General Assembly created a new fund, the Governor's Economic Development Grant Fund, to provide funds to localities to address infrastructure stress resulting from State-sponsored economic development projects.

Thus, in Virginia, economic incentive funds have been increasingly used to attract and maintain businesses. The programs appear to be viewed by many in Virginia's government and business sectors as a crucial tool for maintaining economic competitiveness with other states. This view achieved considerable traction when in 1993 the Virginia Chamber of Commerce requested that the National Association of State Development Agencies (NASDA) assess Virginia's competitiveness for economic growth. The NASDA report provided the groundwork for the support and establishment of Virginia's current economic development programs. The numerous respondents interviewed identified a need to address development incentives for business expansion, retention, and attraction in a comprehensive and studied fashion, and also expressed a growing sentiment that a more activist economic development program was needed.[5] Those interviewed stated that they preferred "a more aggressive Virginia competing for the investments being made by firms outside the state and for the expansion of industries within the state."[6] The report recognized that the other minimalist states were abandoning the old ways for more aggressive incentive programs and that Virginia was competing not only with southeastern but with mid-Atlantic and northeastern states that "boast a wide array of well funded incentive programs."[7] The report found that these types

of programs needed to be developed in order for Virginia to stay competitive,[8] and indeed they were in the next several years.

While the use of economic incentive programs has increased over the last decade in Virginia and in other states across the country, surprisingly little attention has been paid to the effect of such programs on land use, including sprawl. In fact, the role of economic development subsidies in fostering urban sprawl has only rarely been addressed in the academic literature or by the media.[9]

Virginia's Growth Challenges

Virginia, like many states across the country and in the Southeast, is currently facing the challenges that increased growth presents for maintaining quality of life and for sustaining local and regional economies. Some parts of Virginia have already begun to experience the adverse effects of development patterns that produce transportation gridlock, delay, loss of open space, and weakening of older urban centers. These concerns are significant as firms become increasingly mobile and seek to offer high quality of life to their managers and employees. Virginia's substantial land base, transportation network, and scenic beauty have given the Commonwealth an advantage in the 1990s over some of its other state competitors, but this advantage is not assured long term without more concern to the location of growth and investment.

In general, the Southeast is experiencing an explosive population growth and economic development boom. While the nation as a whole lost 6% of its farmland between 1982 and 1997, the Southeast lost 14% – more than ten million acres.[10] Virginia is experiencing sprawl development in many of its high-growth localities – the Piedmont, Northern Virginia, localities along I-95 from Washington, D.C. to the Richmond metropolitan area and along I-64 from the Hampton Roads metropolitan area to Charlottesville.[11] Virginia's population has increased by 900,000 in just the last ten years, according to newly released census figures – an astounding 14% increase in population.[12]

In many communities in Virginia, past and current patterns of growth have led to sprawling residential developments, which produce tangible and intangible costs. The most obvious costs are the costs to local governments and to taxpayers to supply public facilities, such as sewers, schools, and new roads.[13] Less direct costs include a lower quality of life, economic decline in city centers, damage to the rural economy, and environmental harm.[14] For example, residents may spend more time in congested traffic, experience an increasing number of "ozone alert" days, and see their property taxes rise.[15] Furthermore, older towns and cities may find it difficult to compete with nearby areas for new construction, and farmland and forest land may be converted to low density residential developments.[16] Sprawl can also lead to increased water and air pollution and threats to wildlife habitat.[17]

Opinion polls in Virginia have consistently shown deep concern about the consequences of current growth patterns, and strong support for preserving open space and farmland and revitalizing existing communities.[18] In a recent poll, 70% of the respondents believed that traffic problems caused by rapid development should be alleviated by managing new growth so that existing roads and mass transit could accommodate transportation needs.[19] Likewise, a majority of respondents believed that the loss of open space was a problem the Commonwealth should try to prevent and was not the inevitable result of market forces.[20]

Perhaps most important is the fact that encouraging sustainable growth can also be a positive step in retaining and attracting businesses. Quality of life is becoming an important factor in site location. Businesses increasingly understand that sustainable growth can help them maintain the long-term competitiveness

and prosperity of their businesses and the communities in which they are located.[21] For example, many corporations recognize that traffic congestion is a serious impediment to business. Accordingly, sustainable growth can complement and even promote economic growth goals.

Over the last several years, community groups, members of the General Assembly and other public and private sector stakeholders have attempted with varying degrees of success to address Virginia's growth challenges. For example, in the 2000 General Assembly session, several bills were aimed at addressing sprawl.[22] In addition, both the House and the Senate presented resolutions calling on the Joint Subcommittee Studying the Future of Virginia's Environment to recommend legislation to ensure that state spending on economic development, infrastructure, and transportation would discourage sprawl and encourage the redevelopment of central cities and the protection of the Commonwealth's rural landscapes.[23] These resolutions were not adopted and the Commission was instead simply directed to study environmental issues that may require legislative action.[24]

Virginia, like many states, is faced with the challenge of how to grow and foster economic development while simultaneously avoiding unsustainable land use. This report suggests that a key step in facing this challenge is for Virginia *explicitly* to take into account the growth impacts of Virginia's economic incentive programs in allocating grants and loans.

Other State Approaches to Economic Incentive Programs

ELI surveyed several other states often regarded as competitors with Virginia, including Maryland, New Jersey, Tennessee, and North Carolina, in order to determine whether their state economic incentive programs take sustainable growth into account as a factor in allocating funds. Several of these states are beginning to – or have already – taken into account the effects of their incentive programs on patterns of growth and land use.

These state approaches are not presented as models for Virginia to follow. Rather, they are outlined to demonstrate that many states, including those with which Virginia competes to attract businesses, are facing similar challenges and are trying to address them. The examples are also included to show the wide range of approaches currently used and to emphasize the flexibility Virginia has in developing its own approaches to integrating land use considerations into its economic development programs.

Maryland's smart growth legislation allows the state to direct its funding to support locally designated growth areas and to protect rural areas. The centerpiece of the program is the state's 1997 Priority Funding Areas legislation, which limits most state infrastructure funding and economic development program monies to Smart Growth Areas that local governments designate for growth.[25] The Maryland legislation specifically restricts the use of some economic development incentive programs except in priority funding areas.[26] Additionally, some of the regulations implementing Maryland's other economic development incentive programs specifically contain limiting provisions to allow funding only in priority funding areas.[27]

New Jersey has also implemented tools to encourage sustainable growth as part of its economic development incentive programs. Businesses in designated areas are required to create a fewer number of jobs in order to qualify for some programs than if the businesses were to be located elsewhere. For example, under New Jersey's Business Employment Incentive Program (BEIP), businesses creating at least twenty-five new jobs in designated areas may be eligible to receive a BEIP grant; however, businesses locating elsewhere must create seventy-five jobs before they are eligible

for BEIP grants.[28] Second, under the New Jersey Local Development Financing Fund Act, a fund to provide financial assistance to local commercial and industrial projects, the "other" criterion for ranking applications for financial assistance includes whether the project is located in an area targeted for economic development, the extent to which the project will contribute to the economic revitalization of a municipality, the degree to which the project will advance state or regional planning, and the extent to which the location of the project is accessible to public transportation.[29] These tools provide a basis for differentiating among projects with different local effects.

Tennessee also attempts to encourage sustainable land use and growth as part of its economic development incentive programs. Tennessee legislation ties the granting of certain economic development incentives to the approval of local growth plans. The legislation provides an additional five points on a scale of 100 points, or a comparable percentage increase, on evaluation forms for certain grant and loan programs for counties and municipalities that have an approved growth plan by July 1, 2001.[30] The legislation also makes certain economic development incentive grants aimed at local governments unavailable to counties and municipalities that do not have an approved growth plan by July 1, 2001.[31]

North Carolina does not yet have policies in place to encourage sustainable growth as part of its economic development incentive programs. However, the North Carolina Quality Growth Task Force was established to investigate how state government programs and investments influence the quality of growth in North Carolina.[32] The Task Force's 1999 report concluded that the state economic development incentive programs could have an impact on sprawl.[33] The report stated that the Industrial Development Fund "could promote sprawl if it provides funding for extension of water, sewer and other infrastructure to unserved areas."[34] To encourage more compact development and more efficient use of existing infrastructure, the report concluded that "the program could place a priority on funding locations within existing urban areas already served by water and sewer and other infrastructure or areas defined in local land use plans, capital improvement programs or growth management plans."[35] The Task Force was disbanded with the creation of the Joint Legislative Commission on Future Strategies for North Carolina and its conclusions were not pursued.

Virginia varies considerably from the states surveyed in terms of its approach to land use planning and its growth priorities and, therefore, these other state approaches may not provide models for Virginia to follow. However, these examples demonstrate that other states recognize that economic incentive programs are influencing growth patterns. They also suggest that a variety of approaches exist to provide business incentives while fostering sustainable growth.

EXISTING VIRGINIA INCENTIVE FUNDS

Governor's Development Opportunity Fund (GOF)

The Governor's Development Opportunity Fund, administered by the Virginia Economic Development Partnership (VEDP),[36] is described as a "deal-closing fund" to "secure a location or expansion for Virginia in the face of competition from other states or countries."[37] Similarly, the Fund's implementing statute, enacted in 1996 by the Virginia General Assembly, provides that the GOF "is to be used by the Governor to attract economic development prospects and secure the expansion of existing industry in the Commonwealth."[38]

Funds under the GOF are awarded as grants or loans to political subdivisions, which in turn provide funds directly to businesses. The

loans are interest free unless otherwise determined by the Governor and must be repaid to the general fund or State treasury. The grants or loans must be approved by the Governor in accordance with procedures established by the VEDP and approved by the Comptroller.[39] Funds may be used for a wide variety of purposes including, but not limited to: public and private utility expansion or capacity development on and off site; road, rail, or other transportation access costs beyond the funding capability of existing programs; site acquisition; grading, drainage, paving, and any other activity required to prepare a site for construction; and anything else permitted by law."[40]

Criteria for Awarding Grants

The statute describes the two basic criteria that must be met in order for the governor to award a grant to a locality.[41] The first criterion is that a minimum private investment of $10 million must be met. A smaller private investment of $5 million is required in localities with a population between 50,000 and 100,000.[42] A minimum private investment of $2.5 million is required in localities with a population of 50,000 or less.

The second criterion is that a minimum number of jobs must be created. Projects generally must create a minimum of 100 jobs. Only 50 jobs are required in localities with a population between 50,000 and 100,000 and 25 jobs in localities with a population of 50,000 or less. The statute was amended in 1999 to allow a grant award when only half the number of required jobs are created if the average wage of the new jobs is at least twice the prevailing wage for that locality or region.[43]

According to the guidelines developed for the program by VEDP, grant amounts are determined by considering employment, investment, area unemployment, community fiscal stress,[44] community commitment, and industry or company growth potential.[45] In those cases where the project involves job preservation, "jobs saved" will be used to help determine the amount of the grant; however, the project still must meet the minimum job creation requirements[46] Additionally, grants will only be awarded for "projects that would bring additional income into the Commonwealth."[47]

The guidelines also impose requirements on the localities receiving the grants. Localities are required, at a minimum, to match the amount requested from the fund with local funds on a dollar-for dollar basis. Matches may come from local enterprise zone incentives if the locality makes actual expenditures within five years to benefit the specific project. For a locality to receive more than two grants in a fiscal year, it must show that unemployment rates, poverty levels, or other acceptable indicia of fiscal stress or need are significantly higher than the state averages. For a third GOF grant, a locality may demonstrate exceptional need using other acceptable factors besides traditional fiscal stress.[48] In addition, communities are expected to enter into performance agreements with companies upon receipt of a grant to ensure that the job and investment levels agreed to by companies are met, or the communities will be held responsible for returning the grants to the Commonwealth.[49] If funds are made available for site development and a party other than the industry creating the employment also benefits from the grant, the locality must demonstrate how that financial benefit will be passed along to the industry.[50] Finally, if the funds are requested for a relocation of a business from one Virginia locality to another, the community from which the business is moving must be notified by the community applying for the funds.[51]

Reporting Requirements and Results

The Governor is required to provide periodic reports to the legislature (within thirty days of each six month period ending June 30

and December 30). These reports are required to include the name of the company and the type of business in which it engages, the location (city, county or town) of the project, the amount of the grant or loan made from the fund and the purpose for which it will be used, the number of jobs created or projected to be created, the amount of the company's investment in the project, and the timetable for the completion of the project and jobs created.[52]

The governor has filed 14 semi-annual or quarterly reports since September 1993, when the fund was known as the Economic Development Contingency Fund, and the governor's Development Closing Fund. Fiscal year 1997 was the first year in which reports were filed under the name Governor's Development Opportunity Fund. The reports provide information on the program in general as well as on individual projects. Overall, the reports contain all of the information required by the statute except for the timetable for the completion of the project and the jobs created. For the projects that have been announced, the reports to the General Assembly also include a profile, an analysis and recommendation by VEDP, and a scoring sheet. The profile, analysis and recommendation and scoring sheet are all confidential and thus not available to the public. Further information on how the Fund operates is also provided in the Report to the Chairmen of the House Committees on Appropriations and Finance and the Senate Finance Committee.[53]

An analysis of the reports from the Governor to the General Assembly suggests that 33.7 percent of the businesses receiving GOF grants between 1997 and 2000 planned to use some or all of the funds for site preparation. In the same period of time, 22.1 percent of businesses planned on using GOF money for infrastructure (which includes traffic and road improvement, parking, and utility extension), 17.3 percent planned on applying GOF funds toward site or land acquisition, 16.3 percent toward site development, 13.5 percent toward site improvement, 4.9 percent toward locating property, 2.9 percent toward training and 1.0 percent toward expansion. In addition, 15.4 percent of the businesses receiving a GOF grant planned on applying the funds to other activities, such as new equipment, loan financing, and equipment relocation. The letters provide no further explanation of these descriptions nor do they provide specific information such as land acreage or exact location of the project.

In addition to the semi-annual and quarterly reports, the annual reports begun in 1997 provide information on how the Fund has been used. Since 1997, the General Assembly has appropriated approximately $15,000,000 per year to the program. Also since 1997, 88 grants have been awarded from the GOF. In this time period, grants awarded totaled $42,392,000 and were credited with 33,819 new jobs with $2,854,998,000 of related private investment.[54]

The 1997-1999 report concludes that the efficacy per dollar of state GOF incentive increased from FY 1998 to FY 1999 and that the performance measure for job creation using the GOF compared "favorably" with the national range of $2,000-$5,000 of state investment per new job created.[55] The report attributes this in part to the "aggressiveness of recruitment and expansion efforts."[56] In FY 2000, the dollar per job ratio increased from $1,190 in FY 1999 to $1,327, nearly $200 more per job compared to the FY 1999 figure.[57]

Virginia Investment Partnership (VIP) Grant Fund

The VIP Grant Program, established by the Virginia General Assembly in 1999, provides an investment grant incentive for existing Virginia businesses. The program establishes the Virginia Investment Partnership Grant Fund, comprised of the "Major Eligible Employer

Grant Subfund" and the "Investment Performance Grant Subfund."

The Investment Performance Grant Subfund provides grants of up to $25 million to Virginia manufacturers that make a capitalized investment[58] of at least $25 million to increase the productivity of a Virginia manufacturing facility or to utilize a more advanced technology. Such manufacturers are eligible to receive an investment performance grant in five installments beginning in the sixth year after the capital investment is complete.[59] Manufacturers are not eligible if they participate in any other state production grant programs. Although no minimum job creation is required for the Investment Performance Grant, manufacturers are not eligible if the investment results in any net reduction in employment within one year after the capital investment has been completed and verified.[60]

The amount of the Investment Performance Grant is determined by the Secretary of Commerce and Trade, pursuant to the recommendation of VEDP and contingent upon the Governor's approval.[61] Guidelines issued by the VEDP set out the application process and how VEDP will use the data required from applicants to determine the net present value to the Commonwealth over a 20-year period of the direct investment.[62] The negotiated amount of the investment grant is based on the calculations of the added revenue, or "relative value," to the Commonwealth.[63] Individual grants to any eligible manufacturer may not exceed $3 million or ten percent of the amount appropriated by the General Assembly in the year that the terms of a grant are determined. Furthermore, the aggregate amount of grants from the Investment Performance Grant Fund in any year may not exceed $6 million.[64]

To qualify for a grant from the Major Eligible Employer Subfund, businesses must make a minimum capital investment[65] of $100 million and create at least 1,000 new full-time jobs.[66] Under an April 2000 amendment to the law, non-manufacturers, in addition to manufacturers, can now qualify for such grants. Major eligible employers are eligible for up to $25 million from the subfund, payable over a period of not less than five years and not more than seven years beginning in the sixth year after an application is approved.[67] The statute also provides for the Commonwealth to enter into memoranda of understanding with major eligible employers that set forth terms and conditions of the payment of grants. The House Appropriations Committee and the Senate Finance Committee must be given the opportunity to review any memorandum of understanding prior to adoption.[68] While both the Major Eligible Employer Subfund and the Investment Performance Grant cap the grants at $25 million, the application process under the Major Eligible Employer Subfund is much simpler and the grant is not based on the "relative value" to the Commonwealth.

The statute provides for VEDP to establish guidelines that must be approved by the House Appropriations and Senate Finance Committees, but that are notably exempt from the requirements of the Administrative Process Act, Article 2, section 9-6.14:7.1 et seq.[69] The guidelines were issued on July 18, 2000. While there is no statutory or regulatory restriction on how VIP funds may be used, according to the guidelines, the vision is that they be used to increase production capacity, utilize state-of-the-art technology, and modernize assembly processes.[70] Nothing in the statute prevents their use for land acquisition.

The statute requires reports to the House Appropriations and Senate Finance Committees within thirty days of each calendar quarter. Reports must include the name of the eligible manufacturer, the product it manufactures, the locality of the manufacturing facility, the amount of the grant, the number of new jobs created, the amount of capital investment and the timetable for completion of the investment and new jobs created.[71]

In March and April 2000, the first four VIP grants were announced. A total of $1,800,000 was awarded to create 524 new jobs and to preserve 400 jobs in four different counties.[72] The exact use of these grants was not disclosed and was simply listed as "expansion."

Virginia Small Business Financing Authority (VSBFA) Economic Development Programs

The VSBFA administers several economic development programs. The VSBFA was established in 1984 under the Virginia Small Business Financing Act.[73] The provisions of the Administrative Process Act do not apply to VSBFA.[74] The purpose of the VSBFA is to provide financial assistance to small businesses through loans, guarantees, insurance and other assistance. Although VSBFA administers numerous small business assistance programs, including an Environmental Compliance Assistance Fund and an Industrial Development Bond Program, this report only focuses on the grant and loan programs it administers for purposes of supporting Virginia businesses and attracting new businesses.

Virginia Capital Access Program (VCAP)[75]

VCAP provides access to capital for Virginia businesses by encouraging banks to make loans that they would not otherwise make due to a borrower's profile. The program establishes a loan loss reserve at each participating bank, which is funded by enrollment premiums paid by the borrower and VSBFA. To take part in the program, a business must file a loan application with a bank participating in the program. If the financing request does not meet the bank's normal underwriting guidelines, the bank will determine if the proposed loan transaction would be acceptable if the loan were enrolled in VCAP.[76] If the bank approves financing for enrollment in VCAP, the bank then determines the premium amount to be paid by the borrower based on the bank's perceived level of risk. Premiums usually range between three and seven percent of the loan amount and are non-refundable. VSBFA then matches the premium amount and both premiums are contributed to a loan loss reserve fund established for the benefit of the bank.[77] In the 2000 Session, the General Assembly increased the maximum amount of funds that can be used to match any loan from 7 percent to 14 percent of the principal amount of the loan.[78] If the borrower defaults on the loan, the bank can utilize funds in the reserve to offset losses.[79]

Funds borrowed under the program can be used for working capital, expansion, equipment and most business needs.[80] Land acquisition is not prohibited under the program. Both for-profits and non-profits that are authorized to conduct business in Virginia are eligible. Loans are capped at $250,000 per borrower.[81]

According to information provided by VSBFA, in FY 1999, the program helped fund 26 projects with a total of $806,337 and created 82 jobs. The average loan was $31,012. In FY 2000, the program assisted 72 businesses with a total of $3,128,388 and created 79 jobs. The average loan in 2000 was $43,449.[82]

Loan Guaranty Program

The Loan Guaranty Program assists small businesses in obtaining short term financing needed to improve and expand their operations, thereby creating new job opportunities. The Guaranty Program benefits the participating bank by reducing credit and exposure risk. The business benefits by receiving financing it would not otherwise be able to obtain. No specific statutory language exists for the implementation of this program, but rather the provisions creating the VSBFA grant VSBFA broad

authority to make loans to lenders who make loans to eligible small businesses.[83]

Businesses apply directly to a bank for financing. The bank then determines if a government guarantee is needed. If so, the bank and the applicant fill out applications and provide accompanying materials. Applications are reviewed by VSBFA staff and recommendations are made to the Board of Directors for consideration at their monthly board meetings.[84] Although there is no specific job creation requirement, VSBFA considers the economic impact and job creation from the financing, in addition to assessing the company's ability to repay the loan.[85]

The maximum guarantee under the program is $300,000 or 75 percent of the loan amount, whichever is less.[86] Businesses operating in Virginia that meet at least one of the criteria for a "small business" are eligible. Criteria include: $10 million or less in annual revenues over each of the last three years; a net worth of $2 million or less; or fewer than 250 employees.[87] Fees for this program include an application fee, which varies from $100 to $250 dollars depending on the amount of the loan request, and an annual guarantee fee of 1.5 percent of the guarantee amount.[88]

Loans can be used for lines of credit to finance inventory and accounts receivable and for short-term credit loans to finance permanent working capital or fixed asset purchases, such as office equipment.[89] The acquisition of real property is not prohibited. The program cannot be used to refinance or restructure bank debt, eliminate a bank's requirement for collateral or the principal's personal guaranty, or to compensate for a fundamental business weakness.[90]

According to data provided by VSBFA, in FY 1999, the program provided four businesses with loans averaging $562,500 and helped create 140 jobs. The total loan amount for this time period was $2,250,000. In FY 2000, the program provided 13 loans, totaling $3,755,000 and averaging $288,846, and helped create 110 jobs.[91]

Economic Development Revolving Loan Fund

The Economic Development Revolving Loan Fund is designed to fill the financing gap between private debt financing and private equity.[92] Funds are provided for fixed asset financing to new and expanding industries that are creating new jobs and saving at risk jobs in Virginia.[93] The Economic Revolving Loan Fund is regulated and partially funded by the U.S. Commerce Department's Economic Development Administration (EDA).

To qualify for assistance, an applicant must create or save one permanent full-time job within two years of the loan closing for each $10,000 borrowed; provide at least 10 percent of the project costs as cash equity; and provide a first lien on the assets purchased with the loan proceeds.[94] All manufacturing companies or other industries which derive 50 percent or more of their sales outside Virginia are eligible. Local industrial development authorities are also eligible to receive financing to purchase fixed assets to be leased to qualified companies. Companies must meet one of the criteria of a "small business."[95] The maximum loan amount for each project is $1 million dollars. The maximum amount of financing available is the lesser of 40 percent of the total project costs or $10,000 per job to be created or retained.[96] Applications are reviewed by VSBFA staff and recommendations are made to the Board of Directors at the next monthly meeting. Credit decisions are based on the company's credit worthiness, ability to repay the loan, and the collateral offered to secure the loan.[97]

Loan funds can be used for acquiring land and buildings, constructing or improving facilities, and purchasing machinery and equipment. Loans cannot be used for subsidizing a business that is able to obtain financing for the project at reasonable terms from conventional sources,

refinancing or restructuring existing bank debt, relocating a business activity from one Virginia jurisdiction to another, compensating for a fundamental business weakness, or for providing working capital.[98]

According to information provided by VSBFA, in FY 1999, the program funded eleven projects with a total of $5,381,200. The average loan was $489,200 and the program created 1,057 jobs. In FY 2000, the program assisted seven businesses with an average loan of $474,971 and a total of $3,324,800 and created 599 jobs.[99]

Governor's Economic Development Grant Fund

The Governor's Economic Development Grant Fund is a new fund created by the 2000 General Assembly to be used by the Governor in making grants to localities in which a State-sponsored economic development project was completed on or after July 1, 1995 and resulted in a demonstrated stress on local infrastructure.[100] State-sponsored economic development projects are manufacturing facilities or other job-creating economic development projects for which the Commonwealth developed and submitted a formal proposal that included an incentive package to a business locating or expanding in an eligible locality.[101] The Fund essentially provides incentives to localities to attract businesses by assisting localities with the costs associated with local infrastructure needs. No grants had been awarded as of December 1, 2000.

The Secretary of Commerce and Trade, contingent upon the Governor's approval, determines the amount of the grants to be distributed to localities. The amount of a grant may not exceed ten percent of the amount appropriated by the General Assembly to the fund for the fiscal year. Localities may not receive more than $3 million in aggregate grants. The amount of grants in any fiscal year cannot exceed $10 million, and the Commonwealth's annual obligation for such grants cannot exceed $1 million annually per locality.[102] Economic Development Grants to eligible localities must be offset by grants or loans awarded from the Governor's Development Opportunity Fund.[103]

Actions of the Secretary relating to the allocation and awarding of grants are exempt from the requirements of the Administrative Process Act, Section 9-6.14:7.1 et seq.[104] The Secretary of Commerce and Trade is required to develop an application process and guidelines for determining the amount of any grant which an eligible locality may receive. The guidelines are also exempt from the requirements of the Administrative Process Act, but must be reviewed before issuance by the Senate Finance and House Appropriations Committees.[105] Initial guidelines were submitted by the Secretary on November 1, 2000, but had not been finalized as of January 2001.

The Virginia Coalfield Economic Development Authority (VCEDA)

The purpose of the VCEDA is to enhance the economic base of certain counties and a city in the coalfields region of Virginia. The counties are Buchanan, Dickenson, Lee, Russell, Scott, Tazewell, and Wise counties, and the city is the City of Norton. The VCEDA was established in 1988, based on the finding by the General Assembly that: "[t]he Economy of Southwest Virginia has not kept pace with that of the rest of the Commonwealth" and the economic problems are "due in large part to its present inability to diversify."[106]

The program provides low-interest loans and grants to new or expanding private, for-profit businesses and to industrial development authorities. According to the statute, financial support for industrial development authorities and private enterprises may be used for a wide range of activities including, but not limited to:

purchase of real estate; grading of sites; water, sewer, natural gas and electrical line replacement and extensions; construction, rehabilitation, or expansion of buildings; construction of parking facilities; access road construction and street improvements; and such other improvements as the Authority deems necessary to accomplish its purpose."[107] However, by policy, the Authority limits the use of funds by private enterprises to only land, building purchase or construction, and equipment, but allows the industrial development authorities to finance the listed range of uses.[108]

New and expanding industries that are basic employers and will bring new income to the seven-county, one-city service area are eligible for assistance. Priority is given to loans and grants requiring $10,000 or less for each new basic job created, and the average minimum hourly wage should equal or exceed one and one-half times the current federal minimum wage at the time the job was created. Projects providing at least 25 jobs within 12 months of initiation are given priority.[109]

Working capital and refinancing loans are ineligible under the VCEDA.[110] Projects that provide "support employment" are also not eligible for funding. Therefore, facilities which primarily serve the local economy, such as retail and wholesale trade, contract construction, insurance, real estate, and medical services businesses are ineligible.[111] Coal mining production projects and projects involving the relocation of jobs from one county to another within the VCEDA's service area are ineligible for support.[112]

VCEDA is funded by 25 percent of the gross receipts of the Coal and Gas Road Improvement Fund[113] in each participating jurisdiction, half of one percent of gross receipts of the natural gas severance tax levied after June 30, 1990, and state, coal and private sources of funding.[114] In 1997, the VCEDA fund balance was $12,500,000, and the loans and grants given totaled $3,000,000.[115] In 1998, the fund balance was $14,300,00 and the loans and grants given totaled $3,400,000.[116] In 1999, the fund balance was $15,400,00 and the loans and grants given totaled $2,800,000.[117]

The Authority is governed by a Board made up of 16 members who serve four-year terms. The Board is required to submit annual reports of the Authority's activities at the close of the calendar year to the General Assembly, the boards of supervisors of the seven coalfield counties, and the Norton City Council. The reports are required to include a complete operating and financial statement.[118]

According to a VCEDA analysis of its program from 1988 through 1998, 56.0 percent of VCEDA's approved funding in the ten-year period went to new industry. Existing industry received 12.5 percent of the funding. From 1988 through 1998, 10.9 percent went to infrastructure, 10.4 percent went to shell buildings, 9.0 percent went to assist with property acquisition, and 0.9 percent was approved for studies. Buchanan County received a majority of the approved funding, with 40.5 percent of the funding between 1988 and 1998.[119]

FINDINGS AND RECOMMENDATIONS

Findings

Virginia's Economic Incentive Programs Do Not Consider Sustainable Land Use

Virginia's economic incentive programs are not required to take into account their effects on patterns of growth. Rather, the programs focus on job creation, capital investment by the grant and loan recipients and, in general, on increased long term revenue for the Commonwealth.[120] While these economic incentive programs promote an important economic development agenda, they also may

influence growth patterns in many Virginia communities by subsidizing land acquisition, constructing new infrastructure, and establishing business sites without regard to other Virginia goals including efficient land use, housing, and quality of life.

While giving no attention to land use and other spillover effects of business development and location was typical of economic development strategies used by many states in the 1980s and 1990s, this approach neglects key issues relevant now. Business attraction and retention strategies depend more heavily now on quality of life issues than they once did. Furthermore, transportation issues matter over the long term as businesses compete for employees and attempt to grow while maintaining supply chains and customer networks.

States that neglect these issues do so at the risk of diminishing the long-term value of their investments. Greenfield sites located outside of towns – relying wholly on automobile transportation with surface parking, and without attention to surrounding land uses – run the risk of lacking sufficient amenities in the long run to retain employees and managers. Furthermore, greenfield locations for businesses may also suffer from transportation problems as adjacent uses proliferate and secondary roads are affected. At the same time, development at such sites may contribute to the lack of vitality of town commercial centers, to the lack of occupancy and investment in local housing stock in those centers by potential employees, and to the decay of local tax bases.

This study does not affirmatively find that Virginia's economic incentive programs are producing harm, or that they are doing more harm than good. Indeed, the data that would be needed for such a detailed assessment are not readily available. But this study does find that Virginia's extensive and highly influential economic incentive programs are being administered *without regard to* these important development factors – factors that should be on the screen of every public official. The result is missed opportunity.

More Data Are Needed to Administer Economic Incentive Programs for Sustainability

Virginia's economic incentive programs are required to provide data to the General Assembly about the use of state funds. Most of the required information has been provided on a timely basis. The provided information does not, however, contain enough detail on the use of the funds to assess their effect on growth and land use patterns. In addition, there is no assessment of the data under Virginia's statewide goals to protect the environment as anticipated under Article XI, Section 1 of the Virginia Constitution.[121]

The formats used to present information about the implementation of the economic incentive programs also do not help those wishing to gauge the broader effects of the programs, or to assess local impacts of supported projects. Rather, most information is either limited to press release materials about individual projects, or is presented in aggregated financial reports. For example, it is difficult to obtain information about how grants and loans are used with respect to particular facilities and their infrastructure, and whether their uses are affecting land use patterns in Virginia. It is impossible to determine from the documents available the precise location of many of the grant recipients' facilities (beyond the identity of the county or city where the facility is or will be located), and whether any projected new construction and expansion is taking place near existing infrastructure, town centers, housing, or transportation corridors or on rural roads far from most housing, retail, sewer and water service, and other features.

The necessary data would not be difficult to obtain and compile, were the General Assembly or Governor to request it. Indeed, to

the extent that economic incentive programs do not already do so, application and proposal packages could be redesigned specifically to seek this information from applicants and their communities.

Even the detailed information that is currently collected could be organized in a manner that would make it possible to assess the effect of Virginia's economic development programs on land use and sustainable growth. For example, Geographic Information Systems could be used in combination with the site plan information required from applicants to produce alternative projections of growth patterns. The data could be used to identify the location of likely housing increases and to assist in determining necessary ancillary development. This type of compilation would require further work by the Commonwealth's economic development agencies, but chiefly in presenting information already available in a different form.

Recommendations

Consider Growth Impacts in Administering Existing Economic Incentive Programs

Current economic incentive programs should take into account land use impacts in allocating these important funds. This could be done in several ways: (1) by giving preference to proposals that take sustainable land use and development into account, (2) by requiring sustainable land use as an element of these programs, (3) by disclosing impacts and potential impacts and advantages, or (4) by determining the amount of funding based in part on sustainable development criteria.

Considering such factors as the effect of grants and other subsidies on infrastructure needs, land use, and other growth-related impacts does not mean that the programs' economic development goals need to be compromised. In fact, healthy economic development over the long run could be fostered by more thoughtful allocation of economic incentive funds to produce economic growth in locations that are designed to maximize benefits to the surrounding communities.

In addition, current modes of business location and expansion can cause adverse effects on adjacent jurisdictions even while benefiting the target community. Similarly, a project may be quite beneficial in statewide terms for job creation, but impose local burdens on housing, schools, and local services. Under current grant and loan fund programs there is no requirement that these effects be assessed or provided for, with the exception of the Governor's Economic Development Grant Fund, which provides an after-the-fact remedy for some communities.

Furthermore, taking sustainability into account in allocating economic incentive funds does not mean that these programs would be limited to supporting development only in urban portions of metropolitan areas. Economic incentive programs are important in sustaining Virginia's small towns and rural economies as well. In Southside Virginia and the coalfield counties, for example, economic incentives are crucial to economic growth. But the job growth should also help maintain the local tax base, the existing infrastructure (including schools, fire and police services), and the agricultural and forest base of the area. Supporting business parks on miscellaneous parcels of land is generally far less desirable than restoring employment on local main streets and on larger parcels adjacent to towns where the spillover benefits can be maximized. It is possible for Virginia's economic incentive programs to foster business locations and expansions that are within town centers or that are in selected parts of rural areas suitable for sustainable development.

Adopt Sustainable Criteria

The following approaches may be used to

integrate sustainable land use into the Commonwealth's existing economic incentive programs. They may be used separately or in combination. Some may require legislation while others may be implemented through executive or administrative changes.

1) The governor and other program administrators could give a specific *preference* to funding projects that meet certain requirements. If these preferences are articulated, then companies and communities will tailor their future proposals accordingly. In the same way that proposals now must demonstrate job creation or retention benefits, proposals might be required to show positive effects on local community tax bases, use and reuse of existing infrastructure, and avoidance of sprawl effects. This approach would not deny funding to qualified projects that create jobs and meet the other objectives currently specified, but it would clearly establish goals and incentives for projects to do more than just the minimum in order to obtain funding.

2) A second, more aggressive, approach would be to *require* projects to demonstrate these sustainability benefits as a condition of receiving grant or loan funding – in the same way that a proposal must now demonstrate economic or job growth benefits. Adoption of this proposal would make the fulfillment of sustainability criteria a mandatory, integral part of these economic incentive programs, on the same footing as requirements for job creation or net economic benefit to the Commonwealth.

3) A third approach, which could possibly be implemented by administrative action, would be to require project applicants to *disclose* the anticipated external costs and benefits of their activity with regard to sustainable development concerns. The applications for assistance would inquire about these factors. While this relatively modest reform would not add new requirements or create a preference for funding one or another proposal based on these factors, nevertheless it would serve as an incentive for project proponents to design their projects in ways that improve sustainability.

4) Another approach would determine the *amount* of funding based in part on whether factors that would foster sustainable growth are part of the project. Indeed, variations on this approach could allow different grant or loan funding levels based on a point system or sliding scale reflecting the extent to which these other factors were part of the project.

Any of these approaches would help integrate two key Virginia goals: economic development and sustainable land use. Any of them would improve the current Virginia incentive system, which now treats sustainability issues as irrelevant for funding purposes. As discussed earlier, various versions of these approaches are in use in other states, including states that compete with Virginia in attracting businesses. In Maryland, for example, the Priority Funding Areas legislation specifically restricts the use of economic development incentive programs except in priority funding areas.[122] Additionally, some of the regulations implementing Maryland's economic development incentive programs specifically contain limiting provisions to only allow funding in priority funding areas.[123] In New Jersey, businesses are required to create fewer jobs in designated development areas in order to qualify for some incentive programs than if the businesses are located elsewhere, thus providing an additional incentive for businesses locating in economic development areas.[124]

And in Tennessee, legislation has tied the creation of local growth plans to the granting of certain economic development incentives aimed at local governments. The legislation provides an additional 5 points on a scale of 100 points, or a comparable percentage increase on evaluation forms, for certain grant and loan programs for counties and municipalities that have an approved growth plan in place by July 1, 2001.[125]

Use a Public Process to Identify the Factors

The sustainable growth factors to be used in Virginia's incentive programs could be developed through a public process that would obtain input from a variety of stakeholders. To date, there has been minimal public involvement in developing program guidelines. Indeed, several programs' legislative authorities specifically provide that agencies can forego public notice and comment processes on their economic incentive program guidelines and policies.[126]

Virginia could make a substantial contribution to its competitiveness and to corporate perception of Virginia as a cutting-edge "new economy" state by using a public process to identify key factors for the management of impacts on land use. The factors could be adopted as part of incentive program guidelines or to help inform legislative changes to the programs.

New considerations that might be identified through such a public process might include the following:

- whether the project is built around a transportation corridor and contributes to the utility of that corridor, rather than requiring construction of entirely new transportation infrastructure;
- whether the project is an infill development that utilizes current infrastructure;
- whether the project reuses and rehabilitates old buildings;
- whether the project is near to or provides connections to public transportation or alternative modes of transportation, including location near affordable housing;
- whether the project provides for traffic control measures and takes into account traffic patterns in a manner that preserves the community as much as possible, particularly in older towns;
- whether the project involves the cleanup and reuse of a brownfields site;
- whether the project maximizes the retention of open space, agriculture, forest land, and other natural resources and amenities.[127]

Another set of guidelines that could inform a public process for developing sustainable development factors to consider in implementing Virginia's incentive programs are those that are endorsed by the National Governors' Association. The governors recommended ten strategies for "better land use." These could be incorporated into existing state incentive programs designed to serve economic development and sustainability goals, and also could be used as a checklist for the General Assembly in adding criteria for new incentive programs. The ten strategies are: (1) mix land uses; (2) take advantage of existing community assets; (3) create a range of housing opportunities and choices; (4) foster "walkable," close-knit neighborhoods; (5) promote distinctive, attractive communities with a strong sense of place, including the rehabilitation and use of historic buildings; (6) preserve open space, farmland, natural beauty, and critical environmental areas; (7) strengthen and encourage growth in existing

communities; (8) provide a variety of transportation choices; (9) make development decisions predictable, fair, and cost-effective; and (10) encourage citizen and stakeholder participation in development decisions.[128]

Regardless of whether established factors, such as those identified in the National Governors' Association strategy, are used as a guide or new factors are developed, the public, the business community, and local government officials should be given an opportunity to help select the factors, in addition to statewide economic development and job growth, that are considered in Virginia's economic incentive programs.

Establish New Economic Incentive Funds Focused on Sustainable Development

In addition to adding new assessment criteria to current economic incentive programs, new programs could be developed that are specifically aimed at fostering sustainable economic development. Such economic development programs could provide incentives to companies to locate in Virginia, and for Virginia businesses to expand in a manner that is consistent with principles of sustainable development. Factors for determining sustainability could, as discussed above, be developed through a public process. In the alternative, Virginia could use factors that are generally recognized as indicators of sustainability.

The bipartisan National Governors' Association in 1999 adopted a formal resolution entitled "Principles for Better Land Use."[129] The resolution notes that "Governors nationwide are realizing that, at times, government policies – even well-meaning policies – have stimulated and perpetuated the patterns of growth that many states and local government are now trying to address."

The governors' resolution goes on to say, "Public officials at the state and local levels are becoming increasingly aware of the impact that public expenditures can have on growth and the *need for a more balanced approach to providing financial support for development.* In hindsight, it appears that financial assistance has been provided without adequate consideration of the long- term effects on farmland, ranches, forests, or other natural resources of economic, recreational, or aesthetic value."[130]

Drawing on these observations, it may be highly desirable to establish any new economic development funds and incentives with express provisions for sustainability in development. This would not require reworking existing funds, but would recognize that when the General Assembly enacts new legislation it should take care to incorporate the land use and development lessons of the preceding decades.

The establishment of new programs that take land use and development patterns into account is not only sound economic policy, but it also comports with Virginia's commitments under the year 2000 Chesapeake Bay Agreement. In that agreement, the Commonwealth recognized that "future development will be sustainable only if we protect our natural and rural resource land, limit impervious surfaces and concentrate new growth in existing population centers or suitable areas served by appropriate infrastructure."[131] Virginia committed to create "tax incentives" to encourage investments "consistent with sound growth management principles," and to promote redevelopment and remove barriers to investment in underutilized urban, suburban and rural communities.[132] Consistent with these approaches, Virginia should also assure that its direct subsidies and business incentive funds support sustainable use of land throughout the Commonwealth.

CONCLUSION

Although additional research is needed to understand how current incentive programs influence land use and how they may be able to take into account sustainable growth patterns, it

is clear that a significant opportunity is being missed. In 1999 alone, the programs examined in this report provided nearly $30 million in grants and loans to attract and retain job-creating businesses in Virginia. In the future, some or all of these funds have the potential to contribute further to the sustainability of the Commonwealth's communities and its environment.

Endnotes

[1] Sprawl can be defined as low density residential development outside of existing towns, cities, and commercial centers, typically in the countryside where little supporting public infrastructure exists. Environmental Law Institute, *Guiding Growth in Virginia*, Nov. 1998, 11.

[2] In broad terms "sustainability" is the ability to ensure that the future growth of the Commonwealth "meets the needs of the present generation without compromising the ability of future generations to meet their own needs." Typically it includes three elements: economy, community, and environment. Environmental Law Institute, *Blueprint for Sustainable Development of Virginia*, 1994, 1, 2.

[3] Letters: Thomas Jefferson to James Madison, December 20, 1787, Thomas Jefferson to Thomas Leiper, January 21, 1809.

[4] National Association of State Development Agencies, *Evaluating Business Development Incentives*, August 1999, 17.

[5] National Association of State Development Agencies, *Virginia Economic Development Competitiveness Study*, 1993, 10.

[6] *Id.* at 11.

[7] *Id.* at 26.

[8] *Id.* at 24.

[9] For an example of a report that does address this issue, *see* Good Jobs First, *Another Way Sprawl Happens*, January 2000. Good Jobs First, a project of the Institute on Taxation and Economic Policy, has studied the effect of tax increment financing on urban sprawl and its relationship to the quality of jobs created.

[10] Environmental Law Institute and Southern Environmental Law Center (ELI/SELC), *Smart Growth in the Southeast*, 1999, 4.

[11] ELI, *Guiding Growth in Virginia*, 11.

[12] U.S. Census Bureau (last modified Dec. 28, 2000) <http://www.census.gov/population/cen2000/tab04.pdf>.

[13] ELI, *Guiding Growth in Virginia*, 12.

[14] *Id.*

[15] *Id.*

[16] *Id.*

[17] *Id.* at 11.

[18] ELI/SELC, *Smart Growth in the Southeast*, 7.

[19] *Id.*

[20] *Id.*

[21] Urban Land Institute, *Smart Growth Myth and Fact*, 1999.

[22] House Joint Resolution 189, 2000, which would have established a joint subcommittee to study the connections of access highways and entrance roads to state primary and secondary highways and House Joint Resolution 376, 2000, which would have established a joint subcommittee to study ways of preserving farmland in urban areas.

[23] Offered Senate Joint Resolution 76, 2000 and House Joint Resolution 102, 2000. The resolutions also requested that the Joint Subcommittee make recommendations on whether any of the five components of Maryland's Smart Growth and Neighborhood Conservation Initiatives could be employed effectively in Virginia. The final bill that was adopted omitted any specific mention of Maryland's Smart Growth and Neighborhood Conservation Initiatives.

[24] Adopted Senate Joint Resolution 76, 2000.

[25] Md. Code Ann. § 5-7B-04.

[26] Md. Code Ann. § 5-7B-01.

[27] Md. Code Ann. § 7-314(a), Md. Regs. Code tit. 24, § 05.21.04, Md. Regs. Code tit. 24, § 05.22.04, Md. Regs. Code tit. 24, § 05.23.05.

[28] N.J. Stat. § 34:1B-127.

[29] N.J. Stat. § 34:1B-41.

[30] Tenn. Code Ann. § 6-58-109.

[31] Tenn. Code Ann. § 6-58-110.

[32] Quality Growth Task Force, *Inventory of State Government Programs that Influence Growth in North Carolina*, 1999.

[33] *See generally*, Quality Growth Task Force, *Inventory of State Government Programs that Influence Growth in North Carolina*, 1999.

[34] *Id.* at 11.

[35] *Id.*

[36] VEDP, created in 1995 by the Virginia General Assembly, is a state authority governed by a 15-member Board of Directors appointed by the Governor to encourage, stimulate, and support the development and expansion of Virginia's

economy.

[37] Virginia Economic Development Partnership, *A Virginia Guide to Business Incentives*, April 2000.

[38] Va. Code § 2.1-51.6:5.

[39] *Id.*

[40] Va. Code § 2.1-51.6:5(C).

[41] Va. Code § 2.1-51.6:5(D).

[42] The statute treats central cities and urban cores the same as communities with populations of 50,000 to 100,000 for eligibility purposes. Va. Code § 2.1-51.6:5(D). The intent of this treatment is to reduce the stringency of the requirements for cities with blighted cores. Each locality's identification of its central city/urban core is reviewed on a case-by-case basis. Virginia Economic Development Partnership (VEDP), *Governor's Opportunity Fund Guidelines*, 1999.

[43] Va. Code § 2.1–51.6:5(D).

[44] The fiscal stress index "utilizes three jurisdictional measures denoting (1) the level of revenue capacity per capita during a specified fiscal period, (2) the degree of revenue effort over the same time span, and (3) the magnitude of median adjusted gross income for individuals and married couples in the pertinent calendar year" in order to produce an expression of a locality's fiscal strain relative to other Virginia cities and counties. Commission on Local Government, *Comparative Revenue Capacity, Revenue Effort and Fiscal Stress of Virginia's Counties and Cities*, May 1999.

[45] VEDP, *Governor's Opportunity Fund Guidelines*, 3-4.

[46] *Id.* at 1.

[47] *Id.* at 3.

[48] *Id.*

[49] *Id.* at 4.

[50] *Id.* at 1.

[51] *Id.* at 2.

[52] Va. Code § 2.1-51.6:5(F).

[53] In the 1999 Appropriations Act, the General Assembly requested the Secretary of Commerce and Trade to report to the Chairmen of the Senate Finance Committee and House Committees on Appropriations and Finance on the "use and efficacy of state incentives in creating investments and jobs in Virginia." Chapter 935 of the Acts of Assembly, at Item 89 B.

[54] Barry E. DuVal, *Report on Business Incentives: 1997-1999*, Nov. 4, 1999, 8 and Barry E. DuVal, *Report on Business Incentives: 1999-2000*, Nov. 4, 2000, 11.

[55] *Report on Business Incentives: 1997-1999*, 9.

[56] *Id.*

[57] *Report on Business Incentives: 1999-2000*, 11.

[58] The capital investment required under the program is defined as "an investment in real property, personal property or both, at a manufacturing or basic non-manufacturing facility within the Commonwealth that is capitalized by the company and that increases the productivity of the facility, results in the utilization of a more advanced technology than is in use immediately prior to such investment, or both." Va. Code § 2.1-548.43:2.

[59] Va. Code § 2.1-548.43:3(G).

[60] Va. Code § 2.1-548.43:2.

[61] Va. Code § 2.1-548.43:3(C).

[62] VEDP, *Virginia Investment Partnership Guidelines*, July 2000.

[63] Va. Code § 2.1-548.43:2. Note, the statute defines "net present value of benefits to Virginia" as the "present value of the amount by which (i)the anticipated additional state tax revenue is expected to accrue to the Commonwealth as a result of the capital investment and jobs created, over a period following the completion of the capital investment not to exceed twenty years, exceeds (ii)the value of all incentives provided by the Commonwealth, including any grants" under the program.

[64] Va. Code § 2.1-548.43:3(E) & (F).

[65] The definition of capital investment is the same as that used in the Investment Performance Grant Subfund. *See* Footnote 60.

[66] Va. Code § 2.1-548.43:4(A).

[67] Va. Code § 2.1-548.43:4(B).

[68] Va. Code § 2.1-548.43:4(D).

[69] Va. Code § 2.1-548.43:3(D).

[70] VEDP, *Virginia Investment Partnership Guidelines*, July 2000, 1.

[71] Va. Code § 2.1-548.43:5(D).

[72] *Report on Business Incentives: 1999-2000*, 11.

[73] *See* Va. Code §§ 9-197 - 9-235.

[74] Va. Code § 9-208.

[75] This program is termed the Virginia Small Business Growth Fund in the statute (Va. Code § 9-228.8), but VEDP calls the program VCAP.

[76] Virginia Small Business Financing Authority (VSBFA), *Virginia Capital Access Program*, 2000.

[77] *Id.* at 1.

[78] House Bill 1048, 2000.

[79] VSBFA, *Virginia Capital Access Program*, 1.

[80] *Id.*

[81] *Id.*

[82] VSBFA data were acquired through interviews with staff from the Financial Services Division of the Virginia Department of Business Assistance.
[83] Va. Code § 9-217.
[84] VSBFA, *Loan Guaranty Program*, 2000.
[85] *Id.*
[86] *Id.*
[87] *Id.*
[88] *Id.*
[89] *Id.*
[90] *Id.*
[91] *See* Footnote 85.
[92] Va. Code § 59.1-284.2.
[93] VSBFA, *Economic Redevelopment Revolving Loan Fund*, 2000.
[94] However, a subordinate lien position will be accepted if required by the primary lender. *Id.* at 1.
[95] *See* Footnote 90.
[96] VSBFA, *Economic Redevelopment Revolving Loan Fund*, 1.
[97] *Id.*
[98] *Id.*
[99] *See* Footnote 85.
[100] Va. Code § 15.2-946.2.
[101] Va. Code § 15.2-946.1.
[102] Va. Code § 15.2-946.3(B).
[103] Va. Code § 15.2-946.2.
[104] Va. Code § 15.2-946.3(D).
[105] Va. Code § 15.2-946.4.
[106] Va. Code § 15.2-6001.
[107] Va. Code § 15.2-6011.
[108] Virginia Coalfield Economic Development Authority (VCEDA), *Project Policies*, Amended 5-18-00.
[109] *Id.*
[110] *Id.* at 4.
[111] *Id.* at 3-4.
[112] *Id.* at 2.
[113] The Coal and Gas Road Improvement Fund consists of money collected from a license tax on every person engaging in the business of severing coal or gas from the earth. Va. Code § 58.1-3713.
[114] VCEDA, *Virginia Coalfield Economic Development Authority*.
[115] VCEDA, *Annual Report 1997*, 1997, 3.
[116] VCEDA, *Annual Report 1998*, 1998, 3.
[117] VCEDA, *Annual Report 1999*, 1999, 3.
[118] Va. Code § 15.2-6003.
[119] VCEDA, *Annual Report 1998*, 8.
[120] Only one new program, the Urban Public-Private Partnership Redevelopment Fund, considers land use directly by providing incentives to local governments to remediate sites in urban areas. The program is not included in the programs described in Section III because it does not provide grants and loans to businesses. The Fund makes grants and loans to local governments for assembling, planning, clearing and remediating sites, in order to promote such sites to private developers for redevelopment. The Fund was created to "address the serious problem of a lack of developable land in urban areas of the Commonwealth and the high cost of redeveloping such land." Va. Code § 15.2-2415. The establishment of such a fund was recommended by the Commission on the Condition and Future of Virginia's Cities. The Fund is administered by the Department of Housing and Community Development. Va. Code § 15.2-2415. Grants are limited to $500,000. Each grant is conditioned upon a 100 percent match of funds by the local government. Va. Code § 15.2-2417.

[121] "To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public lands, waters, and other natural resources, it shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources, its public lands, and its historical sites and buildings. Further, it shall be the Commonwealth's policy to protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth." Va. Const. Art. XI, § 1.

[122] Md. Code Ann. § 5-7B-04.
[123] Md. Code Ann. § 7-314(a), Md. Regs. Code tit. 24, § 05.21.04, Md. Regs. Code tit. 24, § 05.22.04, Md. Regs. Code tit. 24, § 05.23.05.
[124] N.J. Stat.§ 34:1B-127.
[125] Tenn. Code Ann. § 6-58-109.
[126] Virginia Investment Partnership Grant Fund (Va. Code § 2.1-548.43:3), Governor's Economic Development Grant Fund (Va. Code § 15.2-946.4), and Virginia Small Business Financing Act (Va. Code § 9-208).
[127] *See generally*, ELI/SELC, *Smart Growth in the Southeast* (1999).
[128] National Governors' Association, NGA Policy NR-13 (1999-2001).
[129] *Id.*
[130] *Id.*
[131] Chesapeake 2000 (June 28, 2000).
[132] *Id.*

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